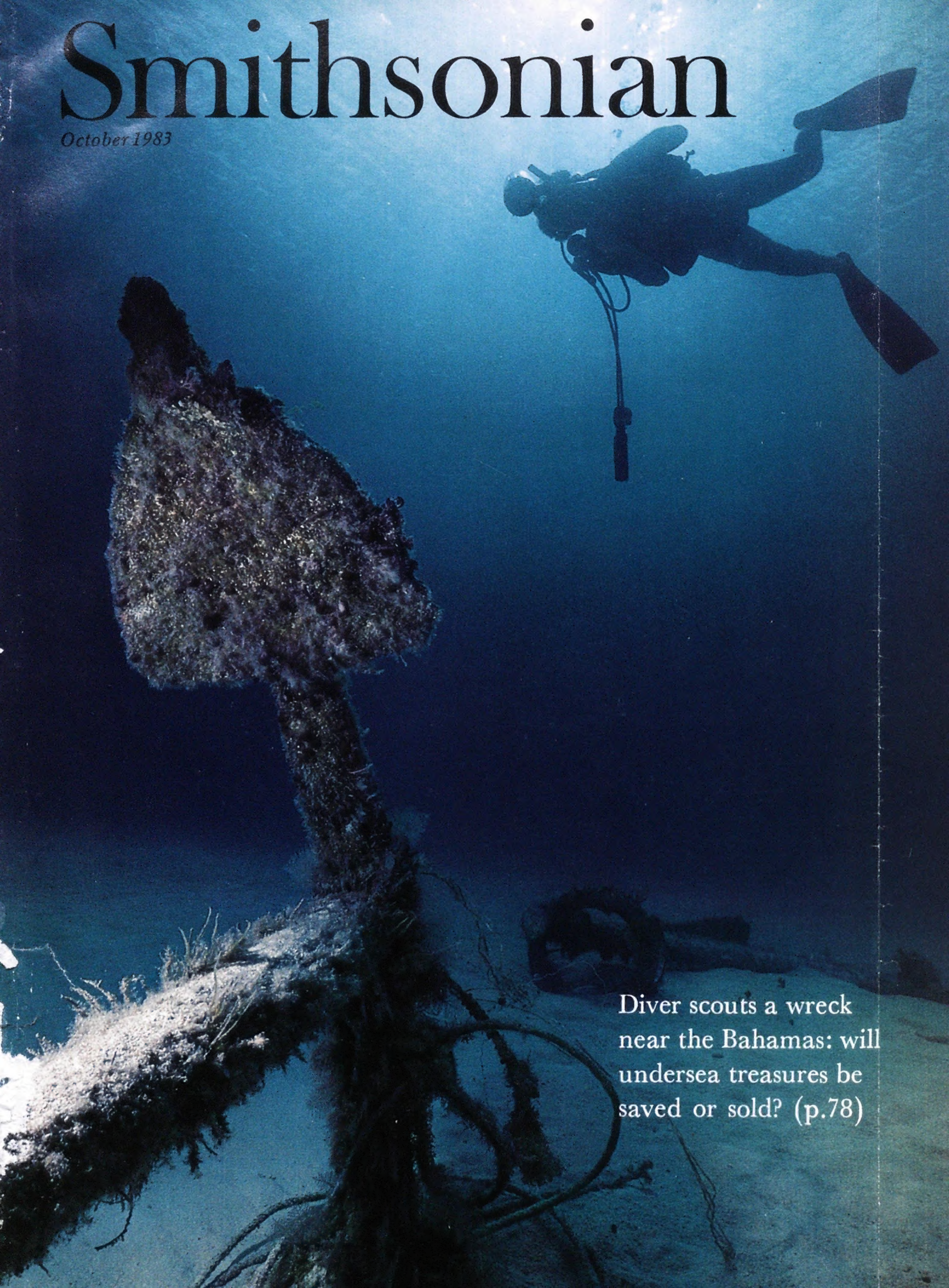
Smithsonian

October 1983



Diver scouts a wreck near the Bahamas: will undersea treasures be saved or sold? (p.78)

The National Audubon Society announces

The Birds of the Countryside

PORCELAIN PLATE COLLECTION

"BUILDING THE NEST"
Northern Oriole

"PROTECTING THE NEST"
Blue Jay

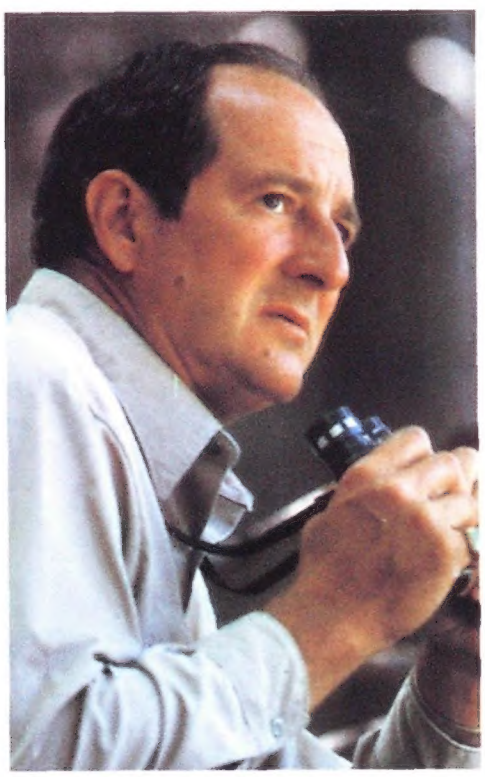
"EMBRACING CHICKS"
Barn Owl

"RETURNING HOME"
Barn Swallow

"LEARNING TO FLY"
Scarlet Tanager

"HUNTING FOR FOOD"
Robin

"DRINKING NECTAR"
Rivoli's Hummingbird



The Birds of the Countryside

by Anthony J. Rudisill

Twelve porcelain collector's plates
by a renowned wildlife artist.

Portraying birds feeding,
building their nests, caring for their young . . .
in authentic natural settings.

FEEDING TIME
Wood Thrush

BUILDING THE NEST
Northern Oriole

EXPLORING THE WOODS
Woodpecker

"BATHING IN POND"
Goldfinch

"PICKING BERRIES"
Cardinal

"NESTING ON EGGS"
Eastern Bluebird

Plates shown much smaller than actual size of 9" in diameter

Official issue of the National Audubon Society.
Limited First Edition.
Advance Deadline: November 30, 1983.

Anthony J. Rudisill is one of those rare wildlife artists who can capture the true personalities of birds and show them as they really are. For that reason, his remarkable bird portraits have won him "Best in Show" awards and praise from art critics throughout the country. And, for the same reason, the National Audubon Society has selected Rudisill as the official artist for a major new series: The Birds of the Countryside Porcelain Plate Collection. And you are now invited to acquire the limited *First Edition* of this new collection by this distinguished artist.

Rudisill is a naturalist as well as an artist. He actually goes into the forests and woodlands to study birds at firsthand—observing and sketching them in much the same way as John James Audubon did a century and a half ago. Then Rudisill returns to his studio where he creates the beautiful, realistic works that have won him national acclaim.

The spirit, the vitality of birds

For this important National Audubon Society collection, Rudisill has created twelve bird portraits—each depicting a different bird species in a typical life activity. For example: a pair of hummingbirds feeds on the necta of honeysuckle blossoms. A northern oriole builds a ne in the branches of a pin oak. A red-crested cardinal pic berries in the snow of a late February afternoon. A grou of scarlet tanagers learns how to fly. A brightly-plumed goldfinch takes a bath in a summer pond.

Each of the twelve bird portraits is warm and delightfu and each has been authenticated for accuracy by expert of the National Audubon Society.

Meticulously crafted in fine porcelain and hand-decorated with 24kt gold

Rudisill has created these works of art exclusively for this collection. And each work will be produced in the form of a fine porcelain collector's plate, to be crafted with painstaking care under the supervision of Frankli Porcelain. All of the designs and colors will be totally faithful to the birds depicted—the dramatic orange an black of the oriole, the pure blue and white of the blu jay, the iridescent greens of the hummingbird and the brilliant red and black of the scarlet tanager.

To assure that every feature and detail of the birds can be clearly seen, each imported porcelain plate wil measure a full nine inches in diameter. And to further enhance the beauty of the art, the plates will be

individually hand-decorated with a border of pure 24 karat gold.

In addition, Rudisill has created a different *artist's remarque* for the back of each plate. This charming and distinctive *remarque* complements the subject portrayed on the front of the plate.

A Certificate of Authenticity will accompany the collection, and a specially written reference folder about the bird portrayed will be sent with each plate. The issue price is $55 per plate, which is payable in two convenient monthly installments.

First Edition available now

You have the opportunity to acquire the *First Edition* of The Birds of the Countryside Porcelain Plate Collection. This will be a limited edition and the *only* edition which will carry the artist's signature. The First Edition will be permanently restricted to the exact number of valid subscriptions for the series entered by June 1984. Thereafter, this limited First Edition will never be made available again.

For those who love nature—who appreciate fine art—who enjoy owning and displaying works of enduring value—this is a singular opportunity. To acquire the First Edition, be sure to mail your application by the advance subscription deadline of November 30, 1983. Send it directly to the National Audubon Society, c/o Franklin Porcelain, Franklin Center, PA 19091, by that date.

The back of each plate in the First Edition will bear Rudisill's signature, along with a unique artist's remarque created by him especially for that plate.

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PORCELAIN PLATE COLLECTION

Valid only if postmarked by November 30, 1983.

Limit: One collection per person.

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October 1983

Smithsonian

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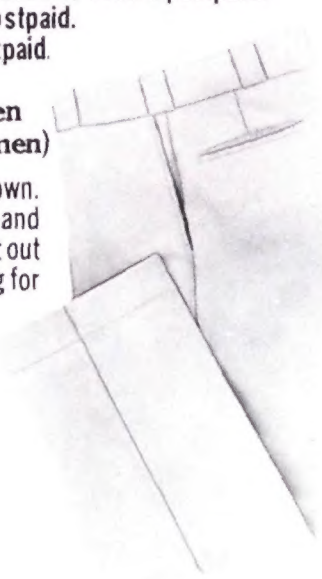

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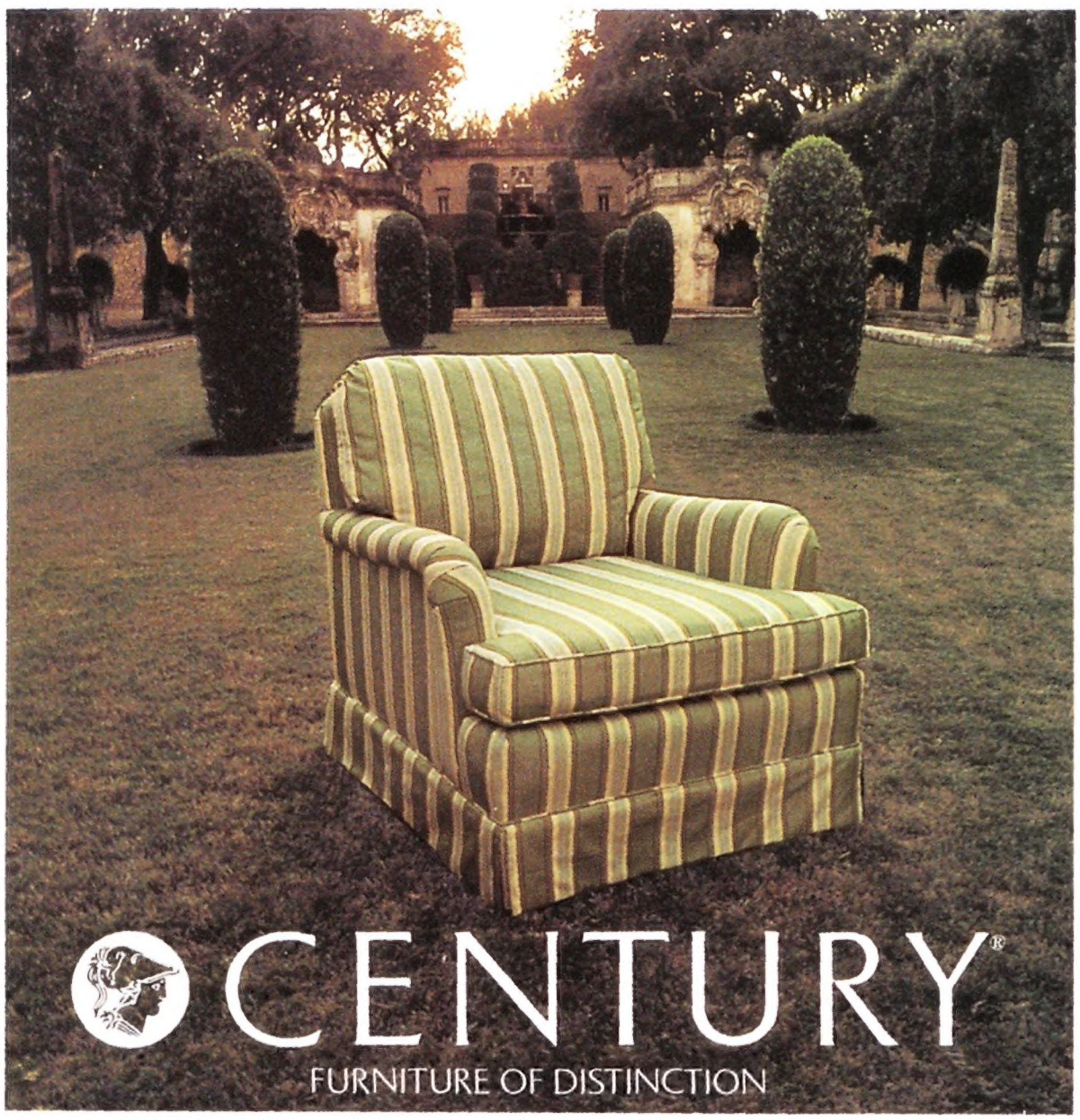

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Secretary Ripley's comments

The view from the castle

The California condor, with fewer than two dozen wild birds left, is on the edge of extinction—but a new effort may pull it back

Next to the large flight cages at the San Diego Zoo's Wild Animal Park, there are smaller walk-in cages with covered hutches in one corner. In two of these huddle grayish gunnysack shapes, fuzzy blurred forms with a cocked handle at the top.

Coming closer, I realize that these are baby condors —baby California condors—and that the bent handle is really a head, with a beady eye in the center. These are the first four hatchlings, culmination of years of dissension among environmentalists, conservationists, aviculturists, nature lovers and other opinionated humans of all types.

I have often felt that the future of this bird, the most majestic in flight of any on the North American continent, has been made far more precarious by its very name. Originally found in the western mountains from Mexico to British Columbia, it was named by George Shaw in 1797 the "California" vulture, or condor. If only it had been called "Oregon" or "Washington" or even the "British Columbia" condor, how much less impassioned the human chorus in California might have been about the great bird's fate.

But California it is, and there the remaining population of about 20 wild birds continues to dwell. So it is in California, a state well known for its extremes, that the arguments over the condor have been raging the most fiercely. For nearly 40 years the debate has gone on between those who would try to save the species by some human intervention and those who preferred to see it fly off into the sunset on shrouded wings, like the enigmatic black shapes in Gustave Doré's illustrations for Dante's *Inferno*.

Now, when it is almost too late, a galvanic and sensible effort is being made to save the condor through aviculture. The U.S. Fish and Wildlife Service, the National Audubon Society, the California state game authorities and two fine zoos, in San Diego and Los Angeles, have at last joined forces to raise condors in captivity from eggs taken from some of the remaining wild pairs. They will mate, it is hoped, and eventually be released in what is left of their natural habitat. It will be a miracle.

If critics will stay silent for enough time to let the experiment work itself out, I feel that we have a fighting chance to save the species. South American condors reared in captivity have recently been successfully returned to their haunts in the Andes and the Pacific littoral of Peru. Peregrine falcons are beginning to gain a toehold in their former American range as a result of similar efforts.

I looked at these passive lumps of baby-condor fat and fluff, staring round with darkly unfathomable eyes, and wondered at the dedication and compassion implicit in their human guardians, Dr. Arthur C. Risser and his crew at San Diego, and Dr. Warren Thomas and his helpers in Los Angeles. Baby condors are strangely repulsive in appearance, but fascinatingly so, as the concentrated love and care that they evoke demonstrates.

May they live to fly off and nest in due course in the Sierra Nevada, and thus prove that mankind is indeed capable of nurturing nature and remedying the unconscious blunders of the past.

S. Dillon Ripley

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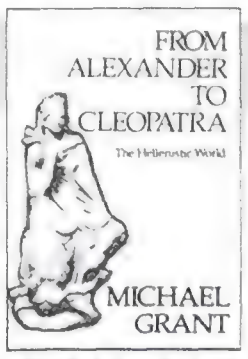

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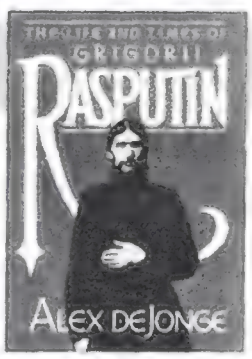

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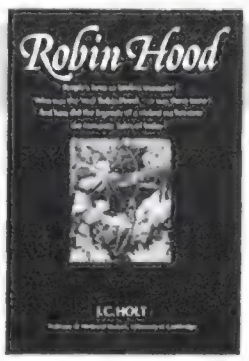

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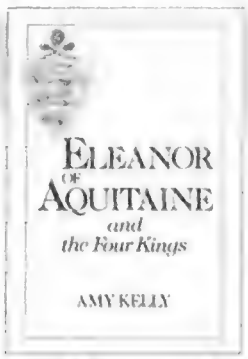

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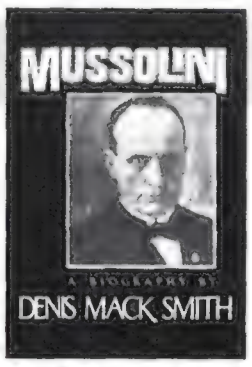

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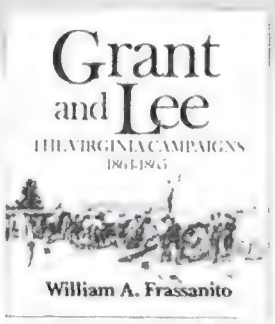

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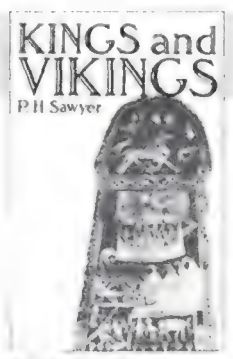

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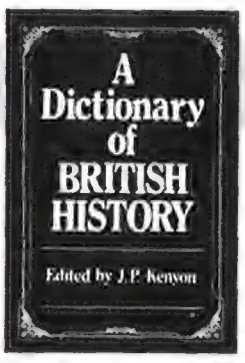

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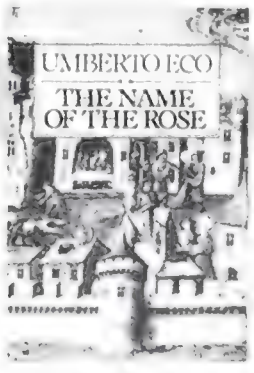

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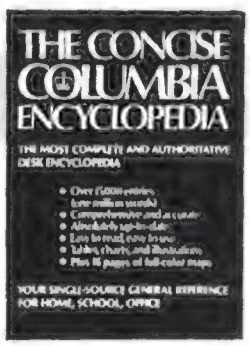
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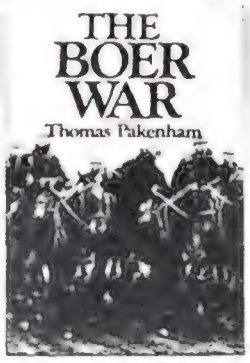

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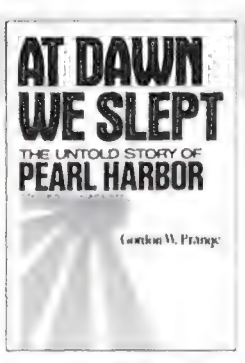

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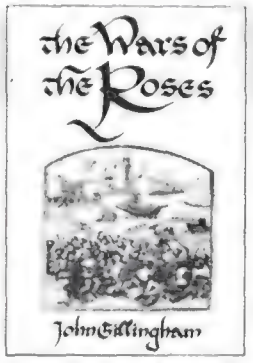

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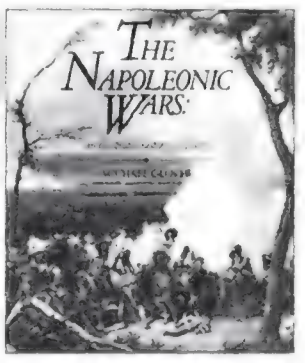

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Letters to the Editor

Schweinfurt raid

Dear Sir: *Victory through Air Power,* mentioned in your August article, was the title of a book by Major Alexander P. de Seversky, a pilot of great ability, an engineer of equal skill, but foremost an air strategist. He tried, early, to persuade the Air Force to equip its pursuit arm with aircraft capable of escorting bombers to their target and back, an approach which General Arnold used eventually, after we incurred huge losses of unescorted bombers in raids like Schweinfurt and Ploesti.
C. S. Ackley
Racine, Wisconsin

Dear Sir: I shall never forget an advertisement cut from an American newspaper, posted on the bulletin board of a U.S. bomber base in England in 1943: "Who's Afraid of the Big Focke Wulf?" Every single crew member on the base signed: "We are."
Frank J. Webster
East Poultney, Vermont

Dear Sir: Nearly every historian of the event has seen fit to deprecate the value of the Regensburg-North Africa shuttle run that was designed, obviously with more hope than success, to draw off some of the fighters that savaged the Schweinfurt raiders. But this former member of the Eighth Air Force stoutly maintains that the North African adventure was not a total loss. Had not the crew of the 96th Bomb Group's "Miracle Tribe" made the North African trip, the Eighth would have been poorer, for it was in North Africa that copilot Jim Harris and engineer Louis Klinchak acquired the most

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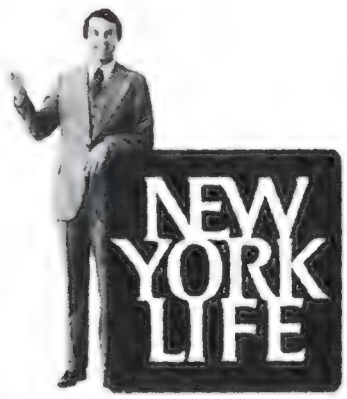

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unique mascot in the Eighth, a perpetually hungry and sometimes ill-tempered donkey named Lady Moe.

Moe had the distinction of being the only burro ever to fly a mission with the Eighth—the bombardment of Bordeaux on the way home. She was, on her arrival in the United Kingdom, an instant celebrity. She starred in an SPCA Fair in London, where she had an audience with the Queen. Her public appearances were the despair of our PR officer who felt, with some justice, that he had signed up to fight for his country rather than to be nursemaid to a donkey. Moe even had a feature written about her in the December 27, 1943, issue of *Time*.

She was a patriotic backer of bond drives [above]. When it came to diet, her tastes were catholic: she would try an artist's palette, cigarettes, cookies, candy or whatever people happened to be eating or using in her presence. Sadly, Moe lost her life shortly after the war when she wandered from her adopted farm near Snetterton Heath into the path of a train on the London and Northeastern.

Fred Huston
Oklahoma City

Dear Sir: I take exception to Mr. Keegan's conclusions that after the Schweinfurt raids Germany dispersed her ball-bearing production, preventing a shortage that would have threatened her war production. Former German Minis-

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ter of Armaments Albert Speer, in an article in the June 1971 *Playboy*, said: "The Allies . . . had victory within their reach in 1943 [by] a series of devastatingly effective bombing raids on our ball-bearing factories . . . pivotal to all our armaments production. By paralyzing this crucial nerve center, they could have completely wiped out our armaments production [in] a few more raids. . . . And then, to our utter astonishment and tremendous relief, the Allied raids abruptly terminated and we were able to rebuild. . . ."
Russell G. Bridenbaugh
Bloomington, Indiana

Dear Sir: When our army swept into Schweinfurt we found the ball-bearing factory operating at full capacity underground, beneath all the rubble.
Thomas D. Gillis, Colonel USA (ret.)
Greenbrae, California

Dear Sir: The photograph on pages 38-39 is captioned "ball-bearing plants on river Main." My memory, a stack of strike photos of a raid by my old outfit, the 301st Bomb Group, 15th Air Force, and a briefing chart I used on December 28, 1944, all tell me this is Regensburg, the river is the Danube and the well-hit target an oil refinery or storage area.
Homer Cole, Captain USAF (ret.)
15th Air Force
Radford, Virginia
Captain Cole is correct. The U.S. Air Force had identified the photograph as Schweinfurt, August 17, 1943, and not even the expert consultants with whom we checked before publication were as sharp-eyed as he. Ed.

Vaux-le-Vicomte

Dear Sir: Fouquet's big mistake in building his expensive chateau, and then inviting his neighbor King Louis XIV to a party and to spend the night, was in ignoring the wisdom that you should never upstage your boss.
Jon Magnusson
Arlington, Virginia

Dear Sir: I have known and loved Vaux-le-Vicomte since earliest childhood, as its previous owner, Germaine Sommier, was my godmother.

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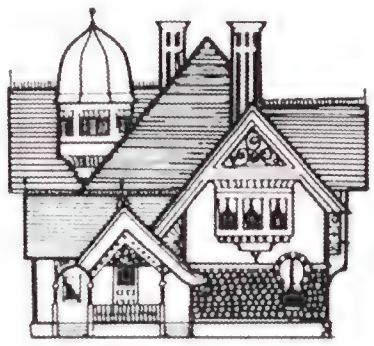

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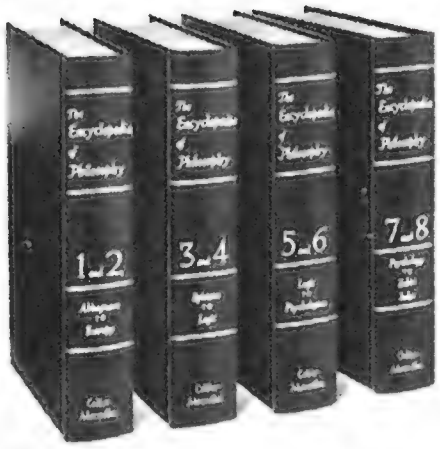

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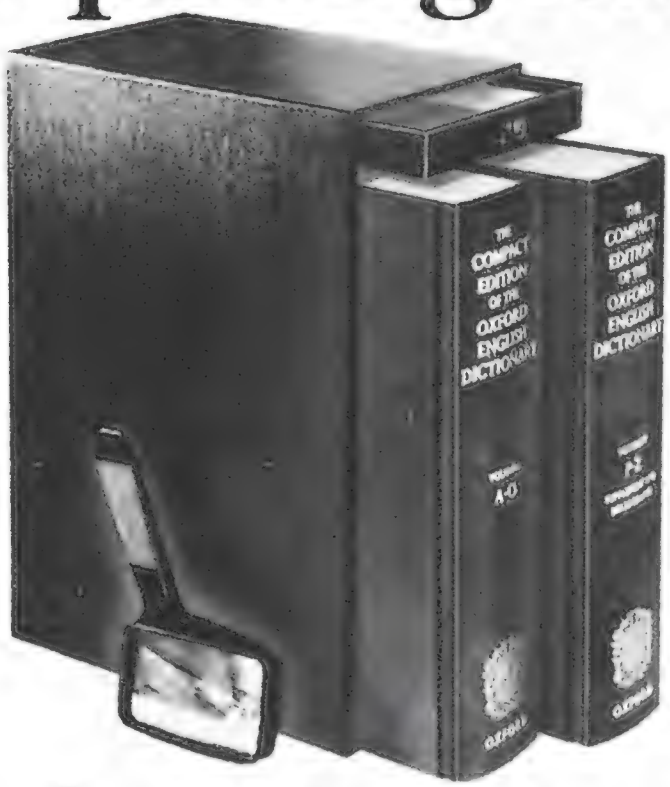

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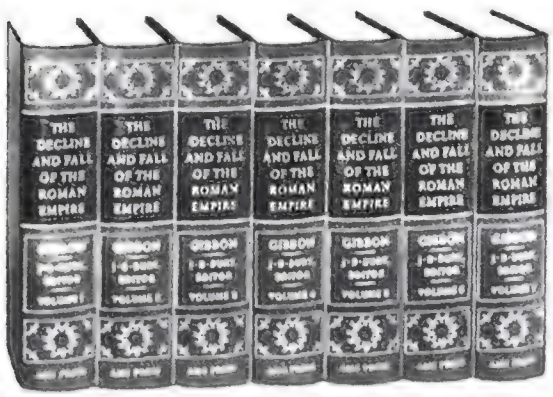

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chateau and its dependencies into an accredited army field hospital for war casualties. Mme Sommier and her friends ran the hospital and tended the wounded. My mother, Renée Nazareth, the daughter of a French army colonel, served as anesthetist. Mme Sommier was awarded the Legion of Honor by a grateful government.

Françoise Bernard
St. Petersburg Beach, Florida

Washington Irving

Dear Sir: From wherever good storytellers go, Irving must be especially pleased by your article, for in 1849 he had the distinction of being elected an Honorary Member of the Smithsonian Institution.

If I may add a postscript to Kenneth Lynn's article, both Rip Van Winkle and *The Legend of Sleepy Hollow* had their origins in Old World folklore. Cosmopolitan—yet very American—master that he was, Irving took the bare bones of original German folktales and brought them robustly to life in a vivid Hudson River Valley setting and cultural atmosphere.

Andrew B. Myers, President
The Washington Irving Society
Tarrytown, New York

Endangered farm animals

Dear Sir: As a Texan with farm upbringing I treasure my glimpses of the ever-more-numerous Longhorns; as a member of the Women Artists of the American West, I am dedicated to visual preservation of our heritage; as a human being I had far rather admire a living Navajo sheep than produce the bronze of an extinct breed.

Gita Packer
Fort Worth

Dear Sir: How about the Spanish Mustang [below]? My late father-in-law, R. E.

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It is also making a mark in today's horse world in endurance and shows.

Mrs. Emmett Brislawn
Oshoto, Wyoming

Backyard art

Dear Sir: You finally have an article that hit home with this folk artist. I, too, hang my pastel paintings on my fence and my sculpture decorates my yard. But I disagree with the premise that we produce our art to say "I did it, I'm here." No, it's revenge. Long after we are gone to dust or ash, the smarties, be they critics or writers, may discover us. We will have fooled them. We will be remembered.

Edson André Johnson
La Canada, California

Dear Sir: If the structures described in your article proclaim "We're here," what then is the message of the house in Boswell, British Columbia, which is made of embalming-fluid bottles?

Richard Hart
Seattle

Ice ponds

Dear Sir: Richard Woodley states, on page 111, "The excavation would be about 50 square feet. . . ." After looking at the pictures, I am ready to bet you an ice cube he meant "50 feet square."

Woodrow C. Johnson
Houston

SMITHSONIAN *owes Mr. Johnson an ice cube.* Ed.

Mall

Dear Sir: Another stony meteorite which fell in Connecticut a century and a half ago has found a place in the literature of meteoritics. In his *Between the Planets* (Harvard Astronomy Series), Dr. Fletcher G. Watson wrote: "Upon hearing of a

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stone that fell from the sky on December 17, 1807, Thomas Jefferson, then President of the United States, reputedly said: 'I could more easily believe that two Yankee professors would lie than that stones would fall from heaven.'" It fell near Weston, about 50 miles from Wethersfield.
George E. Foster
Curator Emeritus of Meteor Crater
Phoenix

Letters

Dear Sir: I was greatly shocked to learn that one reader disapproved of the mermaid painting on your June cover. Modesty is all right in its way, but when it interferes with the appreciation of art, I think that the parent is going a little too far. Mermaids are a part of innocence. I see nothing wrong or obscene about them. I am 11 and I feel that children, as well as adults, should be taught to appreciate, not defile, the idea of the human body.
Jendi Reiter
New York City

Delicious new foods

Dear Sir: As the food finaglers have let their greed override their responsibility, the nutritional integrity of our food has declined to an all-time low and the incidence of diseases and defects escalates. What an ingenious and cunning way to put an end to the population explosion!
Dorothy Dimitre
Millbrae, California

Dear Sir: What does Mr. Wolkomir find so new about grunts? They are frying-pan size, have nice white meat and above all, are easy to catch. When folks in the Florida Keys are hard up, they can always cook up grits and grunts.
Mary Mahoney
Tampa

Dear Sir: I have had my fill of our processed, sterile, preserved, indestructible and embalmed foods. I am passionately addicted to the shared immunities provided by the plants and animals which sustained, for countless centuries, the human race in better strength and health than we now enjoy. I think posterity should live 78 years, as I have—even if it bankrupts Social Security.
J. O. Harvey
Glade Spring, Virginia

The magnificent Apollo Belvedere, on loan from the Vatican, is being currently displayed for the first time in the United States as part of the exhibit, "The Vatican Collections."

Eleganza offers this bust from the famous work together with that of Apollo's twin sister Diana. He came to be known as the sun god; she as goddess of the moon. Either stands alone as a thing of beauty but the similarity of style, the facing positions, and the brother-sister relationship make them ideal companion pieces.

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The exhibit of aircraft paintings by British artist Frank Wootton, to which this column devoted some space last month, is scheduled to continue through next summer. The paintings in the Flight and the Arts Gallery of the National Air and Space Museum remind us that in Hendon, outside London, a new branch of the famous Royal Air Force Museum opened this year. It's called the Bomber Command Museum and it memorializes not only that organization but its American counterpart in World War II—the 8th and 9th Air Forces whose bombers worked alongside the RAF's, as you know from reading the article in the August issue of this magazine about the Schweinfurt raid 40 years ago.

One mission that the RAF Bomber Command carried out independently was the famous "dam-busting" raid, also 40 years ago this year. Much was written about this perilous sortie, which was designed to crack open some of Germany's most important dams and so flood out a great section of her war industry. A very good movie was made of it, and the RAF flyers who pulled it off and survived were quite justly lionized. They completed a very dangerous flight in their big Lancaster bombers and took heavy losses. But they got most of the job done.

One of Frank Wootton's paintings at our museum deals with the dam busters. Have a look at them in action.

Flying isn't invariably a matter of wartime destruction or the thunderous space shots that hurl astronauts into orbit ("sitting on top of 50,000 pieces of machinery all made by the lowest bidder," as an astronaut once wryly remarked). At the other end of the spectrum is an oper-

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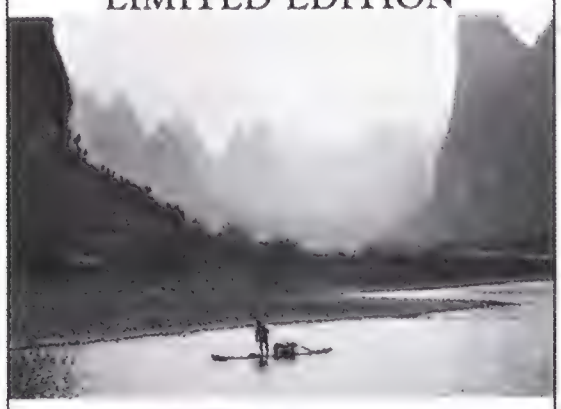

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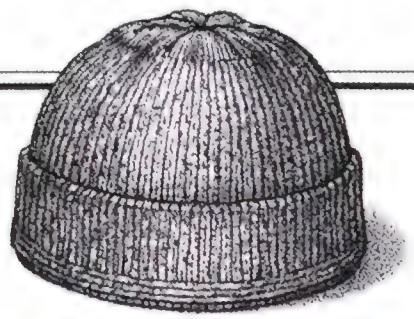

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The head and hands are fine bisque porcelain. The body and arms are traditional doll composition.

Head, arms and hands are all moveable.

The rust colored coat and trousers, and the blue vest are worsted wool. His shirt and neckerchief are cotton.

Cobblers make the shoes of black kid leather, lined and fastened with a pewter buckle.

There are 57 buttons, of three different sizes each with its own embroidered buttonhole.

Mr. Franklin's walking stick is a miniature of the one he carried and left in his will to George Washington. (The original is in the Smithsonian Institution.) It is polished rosewood with sterling silver head and tip.

The scale is two inches to the foot. As Mr. Franklin was 5 feet 7 inches, his figure is 11″ tall.

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ation called the Corporate Angel Network, or CAN for short. It seems appropriate to mention it because its aims are entirely opposite to those of a Lancaster bomber trundling off to bust a dam.

CAN defines itself as a national program of the American Cancer Society. Briefly, its purpose is to get cancer patients to their specific treatment centers all over the country and then get them back home quickly, efficiently and free, by using corporate aircraft.

Here's the idea: a corporation volunteers to transport a cancer patient whenever convenient—that is, when the plane is empty of passengers, when it's going in the right direction, when it can afford the time to take along another person. Everyone has seen those speedy little jets and comfortable older twin-engine planes buzzing in and out of airports. They taxi into special landing areas and deposit business executives for board meetings. After that, the crew may well fly back home with an empty cabin.

Meanwhile, cancer patients often need to travel long distances for treatment. Getting to the prescribed clinic—there are more than 30 major centers in the country—is often expensive and difficult.

So, said the organizers of CAN, how about making use of those empty seats? They put the problem to the corporations, who have responded with enthusiasm. Last December, when I first met Priscilla Blum, who along with Jay Weinberg founded CAN and coordinates its operation, 61 big businesses, ranging alphabetically from Aetna to Xerox, had signed up as participants in the scheme. I checked again about six months later and the number had risen to 150. A month later it was 205. Your stocks should do so well.

The rules of the game are simple and obvious—and designed to make life easy for all the players. The participating plane is not asked to go out of its way, nor generally required to take aboard special equipment. The patient is ambulatory. Usually a family member goes along. The plane's crew is not responsible for ground transportation.

Example: A young fellow about to become a U.S. Marine took his preinduction medical in San Diego. The doc-

Joyce Dopkeen/NYT Pictures

CAN founders Priscilla Blum and Jay Weinberg savor the hospitality in one of

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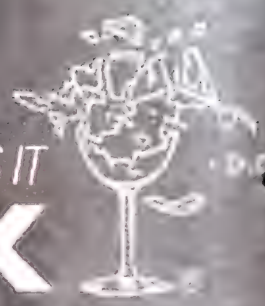

IS IT LIVE, OR IS IT

MEMOREX

the many corporate jets that fly cancer patients free to treatment centers.

tors found leukemia. They called for a bone-marrow transplant from the patient's younger brother, a 15-year-old living in Chicago. CAN went through its file of participants and found that a TRW plane in Cleveland was scheduled to fly to the West Coast. The company offered to make an intermediate landing at Chicago. The mission was completed. Some weeks later, when the transplant was done, the young brother got flown home by the same company.

When I talked to Mrs. Blum she was about to leave for a convention of the Ninety-Nines, the association of women pilots (see this column, June 1982). She comes from a family rich in flying tradition and she and her husband still own a Comanche 250 which they now reluctantly have up for sale. She is also a one-time cancer patient, grateful to be cured. So is Jay Weinberg. This explains the combination of enthusiasm and know-how that the two have put into their brainchild.

CAN makes an appealing story. It's an old-fashioned, neighborly idea that does away with wasted time and energy and helps fellow humans without asking much from anyone. Like all good ideas, it's simple. And to those who fly planes it's a godsend. For pilots are conscious of three blights upon their chosen career or hobby. What they like to do is always expensive; at least in wartime it's highly destructive; and when they sneak off in a small aircraft just to have some fun, it's selfish. CAN has lifted aviation out of the grasp of those bugaboos. For once, flying a plane becomes practical, constructive and thoughtful of others. Listen to this thank-you letter:

"My family and I would like you to know how thankful we are to you for arranging our flights to and from Houston with Champion International. Your efficient personal attention to us truly demonstrates your devotion to your fellow man. . . ."

A lot of old pilots I know may have a hard time accepting that much virtue. I can just see them wincing and hear them muttering under their breaths. But there it is, gang. Aviation has gone kindly on us with Corporate Angel Network.

Edwards Park

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Phenomena, comment and notes

Krakatau was a "dead" volcano that killed 36,000 people back in 1883. Something similar can happen today

Krakatau is one of those things it is possible to feel one knows about without really knowing much at all. "Oh, yes, that island in the Dutch East Indies that blew up during the last century. Loudest noise ever recorded, or something like that." Just enough to be aware that there is a benchmark against which to measure a Mt. St. Helens or an El Chichón.

It was big, all right, dwarfing the last two in the amount of volcanic material ejected (four cubic *miles*) and people killed (more than 36,000). And it was indeed the loudest noise in recorded history, the main blast having been heard in Burma, South Australia and on Rodriguez Island, 2,892 miles away in the Indian Ocean. But it was by no means the biggest eruption in recorded history: just 68 years earlier another volcano, Tambora, in what is now Indonesia, ejected five or ten times as much material.

What makes Krakatau part of our culture is that it was the first such stupendous event to occur after Europe was wired to Asia and North America with underwater telegraph cables. News could travel quickly, and the effects of the explosion in the oceans and the atmosphere could be studied as they happened. Those were exciting times in the earth sciences, and Krakatau was a bonanza. Dutch and English scientists, especially, prepared massive reports, and eyewitness accounts were assiduously collected.

Paradoxically, however, much of that original information remains scattered in

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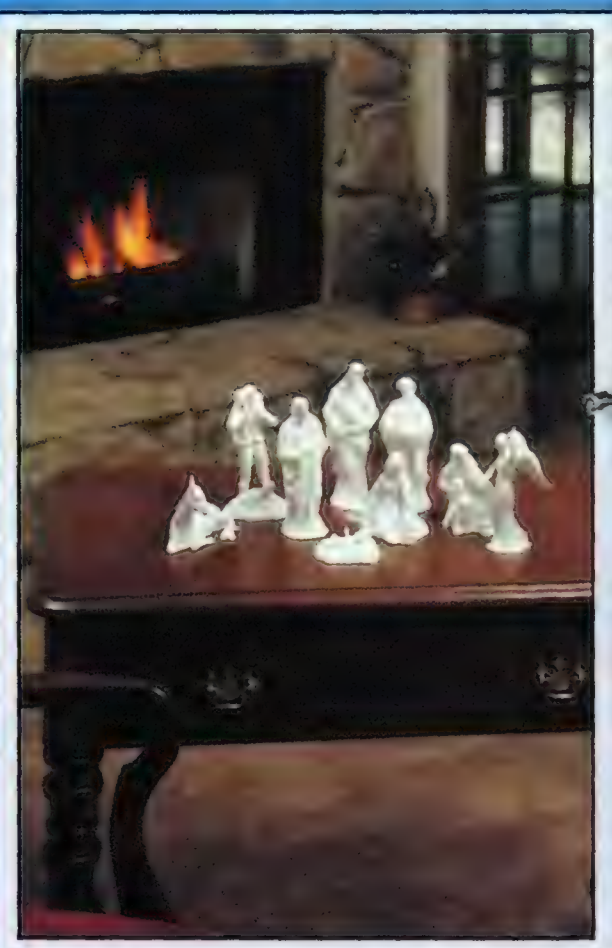
Since its beginning more than 30 years ago, the Boehm Studio has won acclaim as one of the finest porcelain houses the world has ever known. In preparation for this landmark collection, Boehm artists carefully researched Biblical texts and explored the works of many superb sculptors. They made sketches of numerous designs . . . perfecting each detail of clothing, positioning and facial expression. Finally, the long process of modeling, reworking and final sculpting was completed after many months of dedicated work. The result is an exquisite collection of white bisque porcelain figurines portraying the most beloved event of all time – the birth of Jesus Christ.



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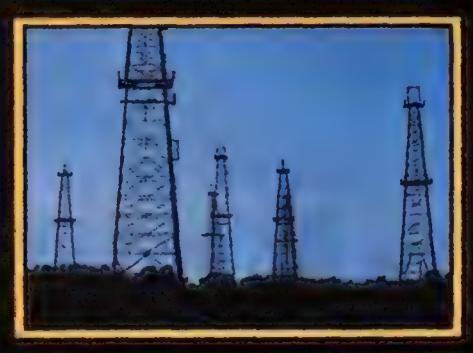

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May 1883 eruption on Krakatau was only hint of catastrophe to come.

libraries and scientific institutions. Textbooks report the facts, but not the details. So it was that two Smithsonian volcanologists, Tom Simkin and Richard S. Fiske (the latter also the director of the National Museum of Natural History), took it upon themselves to compile a source book on the 100th anniversary of that titanic blast. *Krakatau 1883: The Volcanic Eruption and its Effects,* published this month by Smithsonian Institution Press, brings together eyewitness accounts from survivors in Java and Sumatra as well as from seven ships in the Sunda Straits at the time, and presents in English for the first time the monograph a Dutch mining engineer, Rogier Verbeek, published less than two years after the fact. No dry scientific account, the Simkin and Fiske book begins with the laconic telegrams sent from Batavia (now Jakarta) to Singapore: "Anjer, Tjeringin and Telok Betong destroyed." "Light-houses, Straits Sunda disappeared." "Where once Mount Krakatau stood the sea now plays."

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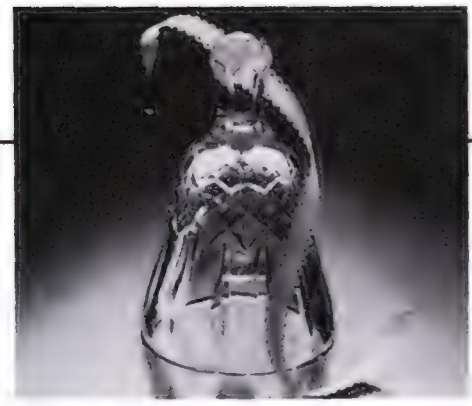

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the air. For 100 pages we read the first-hand accounts of people running for the hills as the waves destroy everything on the coast. Sailors risk death to shovel tons of hot ashes off the decks before the ship sinks. The water is choked with pumice, volcanic rock honeycombed with bubbles so light that it floats, and tangles of human bodies. One report was tape-recorded in 1946, the recollections of a man who had been an 11-year-old boy on his father's ship near Sunda Straits when Krakatau blew.

Some of the reports came from places far from Indonesia. The air wave set off by the largest blast was recorded on every barograph in the world. Spreading out in all directions, the wave met itself on the opposite side of the world (near Bogo ta, Colombia) and bounced back to its origin. Here it rebounded outward again, so that some barographs recorded the wave seven times as it bounced back and forth between Krakatau and its antipode. Tsunamis reached Aden, 4,400 miles away, 12 hours after the blast. Rafts of floating pumice washed up in Africa and Melanesia many months later.

Volcanic dust ascended high in the atmosphere and spread to higher latitudes. Sunsets were intense around the world: in Poughkeepsie and New Haven, fire departments were called out when the intense reds of the sunsets looked like conflagrations in the distance. The fine particles filtered out enough sunshine to lower the global temperature by about one degree F for several years.

Krakatau was more than a spectacle; it was an important milestone in the study of volcanoes. Simkin and Fiske write that it led to our understanding of calderas, the large, circular depressions left by some volcanoes. Many had thought that the missing portions of volcanoes such as Krakatau had simply been blasted away (I always thought it had "blown up," leaving a crater like those left by thermonuclear explosions). But Verbeek deduced the truth: the volcano had ejected great masses of magma, the molten rock within the Earth, from a chamber under the mountain, which then simply collapsed into the empty space beneath it. The new islands left around Krakatau by the eruption were fresh volcanic rock, not old debris from the original mountain.

An atmospheric scientist called Krakatau "a turning point in history for the

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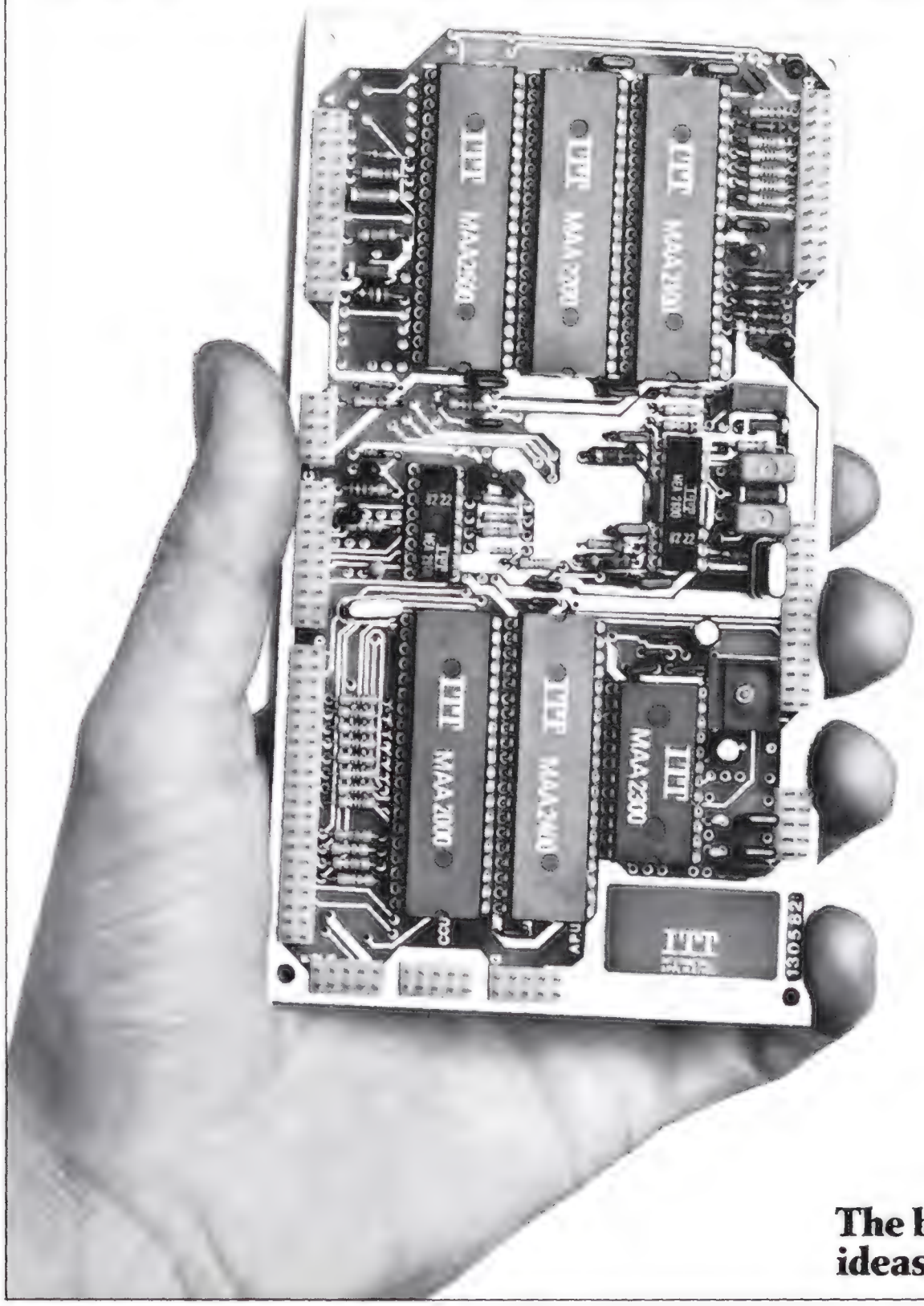

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science of meteorology" for its contribution to our understanding of stratospheric circulation patterns, optical effects (and climatic impact) of fine particles at high altitudes, and propagation of explosive waves through the atmosphere. Biologists learned about how life recolonized the devastated areas, just as they are doing now around Mt. St. Helens (SMITHSONIAN, January 1981).

Those floating islands of pumice are especially fascinating to biogeographers. Sea captains reported seeing crabs on their surfaces (some were solid enough for a man to walk on) and numerous small fish living under them. Any number of alien species may have arrived on African shores within a year.

Scientists are still not sure what caused the tsunamis that ravaged the coasts of Java and Sumatra. Discussing Krakatau, Simkin lists four possible mechanisms:

- The successive landslides as the bulk of the island collapses into the sea are enough to cause massive waves.
- The emptied magma chamber itself collapses in such a way that one block of the sea floor suddenly drops in relation to a neighboring block, again setting a wave in motion.
- Great masses of volcanic material thrown into the air fall back into the sea close by, causing waves.
- An underwater eruption itself punches up a huge swell of water known as a water dome. This radiates outward and, like any wave, can reach menacing heights as it approaches a coastline.

The problem is that all four phenomena occurred at Krakatau. More study of that eruption may determine which caused the 130-foot waves that killed so many. Finding out can help us prepare when some future eruption on the scale of Krakatau appears imminent.

Krakatau is history—and the future. Although it had erupted two centuries earlier—in 1681—it was considered a "dead volcano." The Smithsonian has a data bank listing the volcanoes known to have erupted during the past 10,000 years. Of special interest are the 710 that have been active in that time—but not in the past 200 years. Simkin and Fiske point out that many volcanoes remain capable of devastating eruptions for ten million years. Quiet periods may be as ominous as is a lack of seismic activity in earthquake-prone

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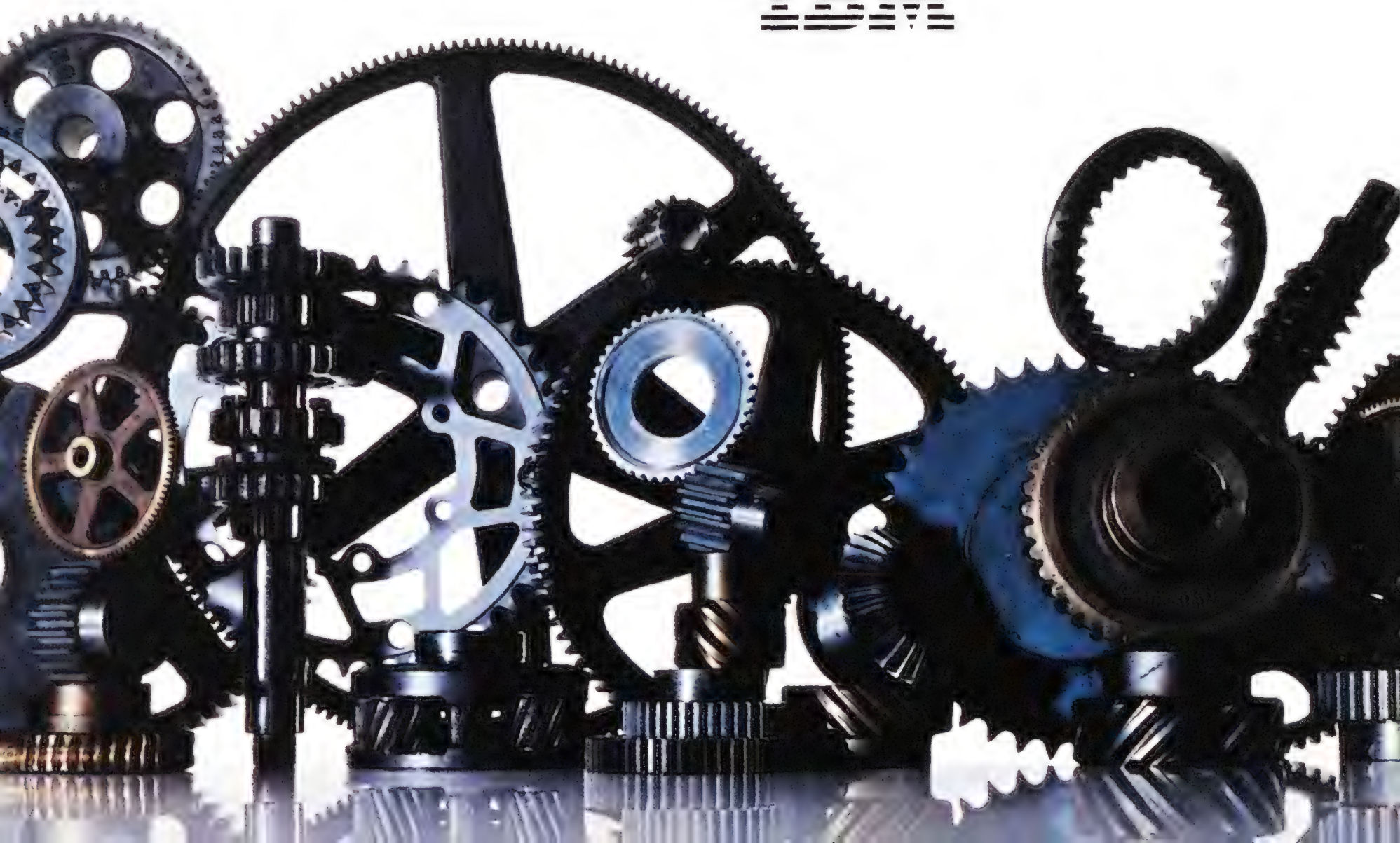

areas where strain is accumulating along a fault line (SMITHSONIAN, July 1983). A quiet volcano may be building up to an eruption proportional to the length of such a quiet period, and these periods can last tens of thousands of years. Indonesia has the most volcanoes of any nation in the world, but the United States is third, behind Japan and ahead of the Soviet Union. In our country 53 volcanoes have been active in historic times.

This book is for the serious student as well as the interested layman. The Verbeek monograph runs a little more than 100 pages, and the book's final section provides a sampling of scientific papers, from 1884 to 1982, on the eruption, showing how our interpretation and understanding have changed over the years. But it is the eyewitness accounts of ordinary people that are absolutely gripping. The reader lives through it, knowing all the while that it really happened. And the authors make clear not only that it can but that it will happen again.

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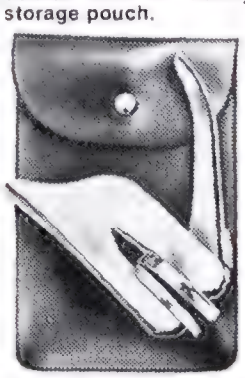

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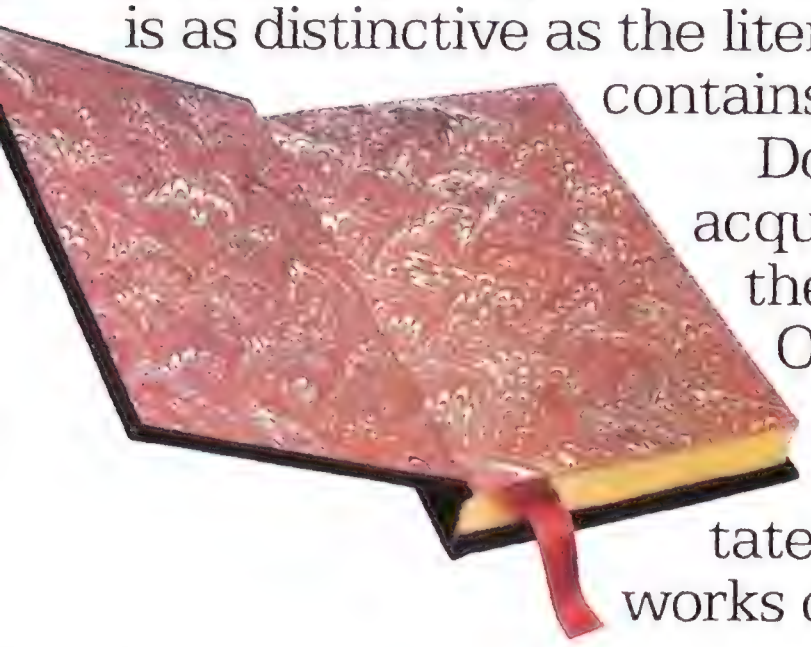

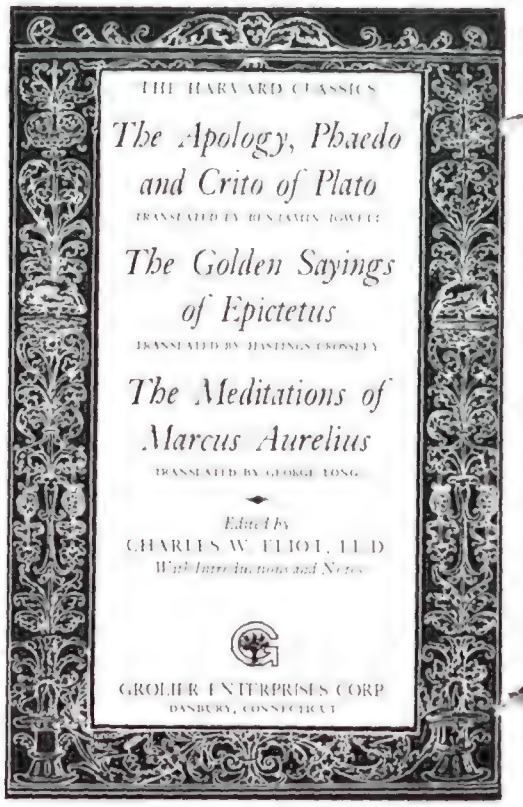

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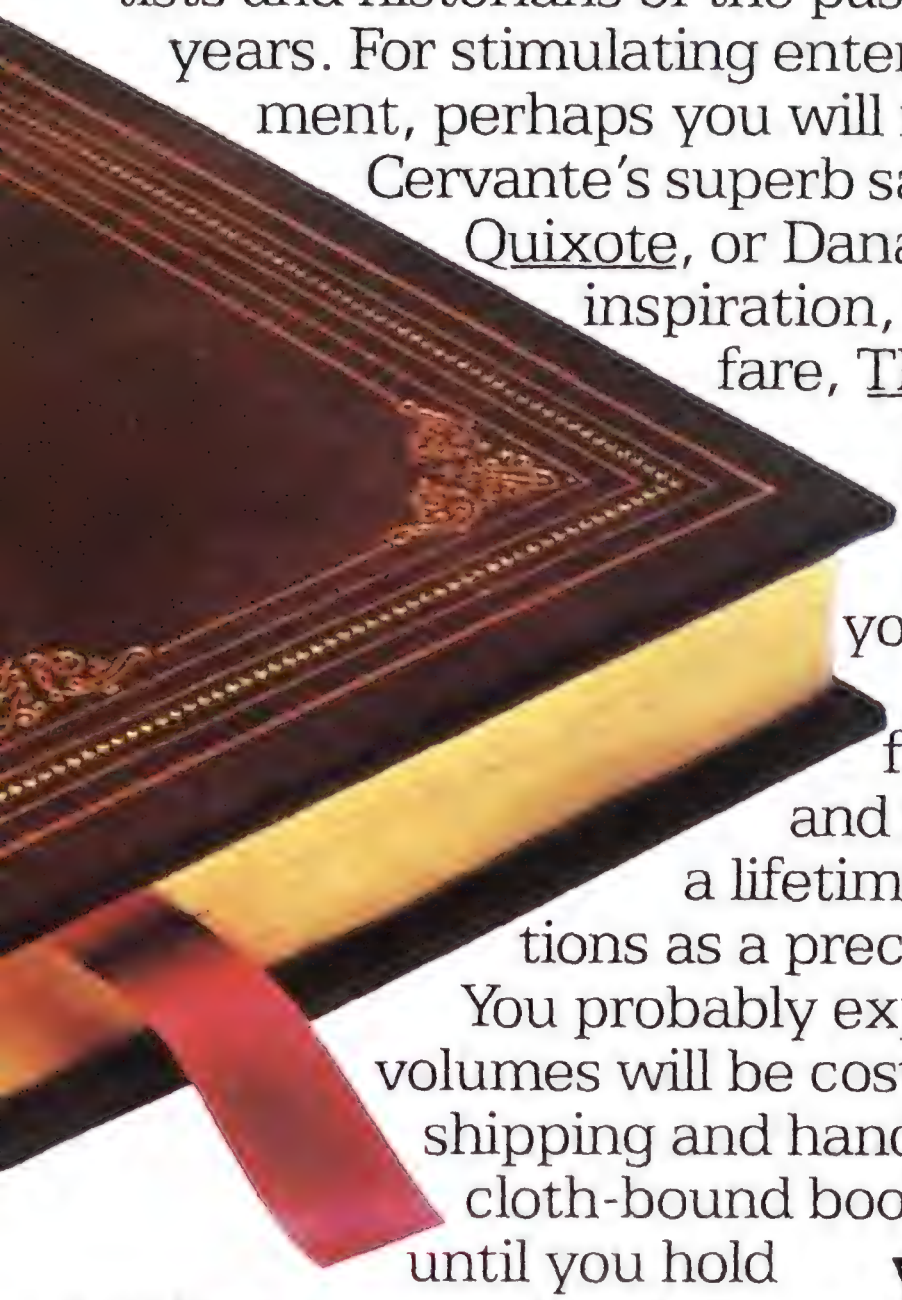

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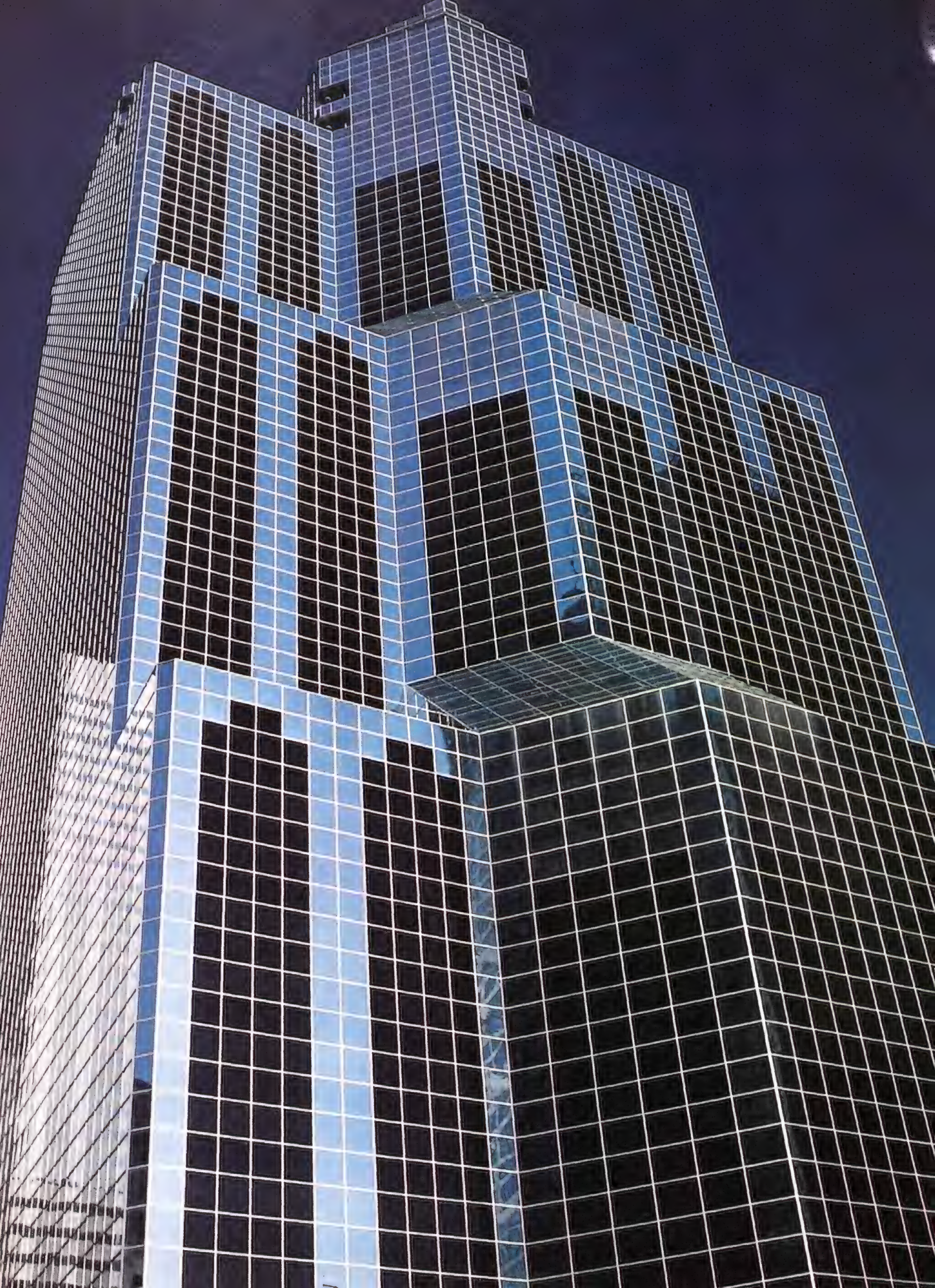


By Phil Patton

A bold new breed of buildings is reaching toward the skies

The skyscraper, an all-American creation born a century ago, is once more on the rise, but taking shapes we have not seen before

Steeplejacks work on skeleton of New York's Irving Trust Building. Ancestral Woolworth Building at left.

The skyscraper is as American as jazz. It is this country's greatest and most characteristic contribution to the city, to whose skyline it lends rhythm and romance. Like jazz, skyscraper architecture is a popular art. During its golden age, in the 1920s and '30s, the skyscraper became a popular symbol of our national character: a soaring, upward-aspiring image as powerful as a moon rocket. Now, some 50 years after it reached its high point with the generation of the Chrysler and Empire State Buildings, and a hundred years after the invention of the steel skeleton gave it birth, the skyscraper is undergoing a renaissance.

World War II and the Modernist International Style had brought about its decline. The skyscraper was succeeded by the "high-rise" with a flat roof at the top, a cold, empty plaza at the bottom, and a tendency to look like a giant filing case for office workers.

Today, the skyscraper is all-American once more. It has begun to sprout a top that dashes romantically once again toward the sky, to vary and decorate its shape in musical rhythms and, at its base, to gather glassed arcades, clustering like medieval villages snuggling up to the castle walls. Most of all, the new skyscrapers seek the same upward-surging feel of the great skyscrapers of the years between the world wars.

One of the first to comment on the essential qualities of the skyscraper was Henry James. In 1904, returning to New York for the first time in nearly a quarter of a century, he was shocked and fascinated by what he saw. In *The American Scene*, he described the new tall buildings: ". . . the multitudinous sky-scrapers standing up to the view, from the water, like extravagant pins in a cushion already overplanted. . . ."

The commercial drive that James felt helped to shape the skyscraper was part of a more romantic aspiration, best defined by one of the form's inventors, Louis Sullivan. "The force and power of altitude,"

Glass facade of Helmut Jahn's One South Wacker in Chicago varies dramatically with changes of light.

Still under construction is the highly publicized "Chippendale" pediment of the AT&T Building.

New towers rise in heart of Manhattan: from left, the IBM Building, Trump Tower and AT&T Building.

Sullivan wrote in 1896, "must be in it, the glory and pride of exaltation must be in it. It must be every inch a proud and soaring thing."

The skyscraper exerted a particular sway on Europeans. But, by one of the ironies of esthetic history, it was these same Europeans, along with the Depression and World War II, who broke off the skyscraper tradition. Finding themselves in America after the war, the architects who had created the International Style built skyscrapers that were very different from the ones they had admired. In the '50s and '60s, beginning with Mies van der Rohe's Seagram Building in New York, the skyscraper became boxy and rigid, aspiring more to ideal geometric form than to the sky.

In reaction, from Manhattan's AT&T Building—the celebrated Johnson and Burgee "Chippendale tower" —to the romanticized Art Deco of Helmut Jahn's design for the 82-story Southwest Center (p. 49) scheduled to rise in Houston, the skyscraper has again become "proud and soaring." These new buildings have broken decisively out of the box. They are notched, massed, slick-skinned, full of setbacks, even *decorated*. Just as surely, they have broken out of the boxed-in theories of the less-is-more, form-follows-function school. To this group of theories the new architects respond like Robert Venturi, the original "Post-Modernist" theorist, who said "less is a bore." Part of the func-

One of the most controversial recent structures, it is the work of Philip Johnson and John Burgee.

tion of a building's form, they argue, is to entertain, excite and symbolize.

Corporations have learned that their headquarters or trademark building is a crucial part of their public image. Such a structure ideally should be as clear on the skyline as the corporate logo and execute its civic responsibility by adding an exciting, inspiring shape to the skyline.

But, contends Cesar Pelli, dean of the Yale School of Architecture, "The impetus for the new types of buildings has come from architects. This is a cultural phenomenon, not an economic one."

The role of the architect has changed. Such Modernists as Walter Gropius and Mies van der Rohe sought buildings without architecture, architecture that did not reflect the individuality of the builder. Often enough, they got what they wanted. Today, architects are stars: Philip Johnson, for instance, gets photographed for the cover of *Time* magazine, holding a model of the AT&T tower.

The two birthplaces of the skyscraper, Chicago and New York, are getting their fair share of the new buildings. And the rest of the country is too. Some of the finest buildings—Michael Graves' Humana Tower in Louisville or the work in Miami of the firm called Arquitectonica—are going up in cities that have more recently reached the level of economic maturity to accommodate them.

New York's new buildings cluster in an area of just a few blocks: Johnson and Burgee's AT&T and Edward Larrabee Barnes' sleek, green granite IBM Building sit side by side, with the Trump Tower (by Swanke, Hayden, Connell) backed up to them (opposite). Pelli's Museum of Modern Art tower is within sight.

Redefining Modernism's vocabulary

In Chicago, too, the new buildings are located in traditional, prime skyscraper territory—on Lakeshore Drive, Michigan Avenue or Wacker Drive.

Arquitectonica has put the vocabulary of Modernism to playful, almost childlike uses. A series of the firm's residential towers now line Brickell Avenue in Miami. Its 37-story Helmsley Center apartment "gateway," like a great triumphal arch framing the view of the bay, will offer the world's largest "picture window." For San Antonio, the firm is currently completing plans for four tall tower "columns" supporting a connecting six-story office "beam."

But it is in burgeoning Houston, the buckle of the Sunbelt, that the skyscraper is enjoying its most striking resurgence. Energy wealth has made Houston second only to New York as fertile ground for the new skyscrapers. Seen from its freeways, Houston's skyline sports a new building every few months. Here, Johnson and Burgee's massed-glass Transco Tower (p. 46) and neo-Gothic Republic Bank Center, now under construction, will join their landmark Pennzoil Place (SMITHSONIAN, February 1975). Cesar Pelli has designed a number of sleek, colored-glass apartment and office towers at the edge of the city. I. M. Pei's 75-story Texas Commerce Tower, finished last year, is the tallest building outside Chicago or New York and it may soon be topped by Jahn's projected 1,352-foot-high Southwest Center, which will create one of the most dramatic silhouettes since the Chrysler Building, which was the inspiration for its 130-foot pinnacle.

In the Southwest Center, Jahn says, he is seeking a synthesis between the technical achievements of the Modern period and the esthetic ones of the earlier era of the skyscraper. Houston's urban sense, its downtown feel, is tenuous at best. The Bank of the Southwest competition which awarded the contract specifically included the requirement that the building have a feel of tradition to it, that it become a landmark.

The Southwest Center is like the classic skyscrapers in another respect: it is one of the few skyscrapers of recent years to offer the kind of structural innovation

New Yorker Phil Patton, who writes on art and design, lives in a low-rise building in Brooklyn and has yet to ascend to the top of the Empire State Building.

Cesar Pelli's Four Leaf Towers, Houston, are sheathed in colored glass, topped with truncated pyramids.

In Houston, Johnson and Burgee's soaring Transco Tower looms near their curvilinear Post Oak Central.

that once spurred buildings upward. It employs something called "the Ultimate Structure," devised by engineer William J. LeMessurier. This system, necessitated by the building's extreme narrowness for such a tall structure, employs eight massive concrete columns as the weight-bearing elements, cross braced by two sets of "superdiagonals."

Through the '60s, skyscraper engineering reached a certain plateau of sophistication, one which, finally, it felt no need to flaunt. It was one thing for buildings like Chicago's John Hancock Center to flash their diagonal cross bracings when that technology was new. Now, when such systems are common, architects are more inclined to hide them beneath romanticized metal or glass skins. Among the last skyscrapers to feature major innovations in structure were the supertowers of the late 1960s and early '70s—the Sears and Hancock towers in Chicago and the World Trade Center in New York; their "tube" system, developed largely by the late Fazlur R. Khan of Skidmore, Owings & Merrill, supports the building not by a skeleton or central core but by a rigid exterior, or tube.

It may turn out that Modernism's most lasting contribution to skyscraper architecture is not the box but what is inside the box: the rationalization of designing and building the interior. This technology has made it largely possible for architects to design the exterior of the building in just about any style they wish. Philip Johnson has said that the inside of his AT&T Building is "pure Mies van der Rohe—a modern grid." And Jahn admits that the "high level of sophistication" brought about by technological developments has freed the architect to pay more attention to "urban impact and symbolic performance."

The standardization of basic structural methods—whether the all-steel frame or reinforced concrete—has made possible "fast-track" design, in which the details of the exterior and interior are being designed even as the basic structure is being built. Skyscraper construction today also involves elaborate wind-tunnel testing of models of the finished building and its neighbors to secure the structure against the force of winds and to mitigate the "canyon" effect of such winds between close-together buildings. The necessity of such testing was illustrated when Hurricane Alicia struck Houston last August. The glass giants of Johnson and Burgee, Cesar Pelli and I. M. Pei withstood winds that approached 100 miles per hour with very little actual damage.

What constitutes a skyscraper changes with time. The word itself has been traced back to the 1840s, when it might have referred to a new four-story structure, a tall tale or a very tall man. The term echoes the tradition of the frontier tall tale, full of gigantism and exaggeration: "a building so high it scraped up against the sky."

Buildings over five stories were made possible by the development of the elevator in the 1850s; even taller ones—skyscrapers proper—by the steel skeleton in the 1880s, first used in such buildings as William Le Baron Jenney's Home Insurance Building of 1885. But it was not until the turn of the century that skyscrapers began to rise above the skyline.

At first no one knew just what a skyscraper should

look like. Some early architects proceeded by piling Renaissance palazzi on top of each other; others looked to historical towers, like the campanile in Venice which served as a model for Napoleon LeBrun's Metropolitan Life Tower in New York or the Gothic towers that inspired Cass Gilbert's "Cathedral of Commerce," the great Woolworth Building, which held the title of world's tallest for years. Less well received was the Equitable Building of 1915; its huge, ugly, shadow-casting bulk inspired the first New York zoning regulations for skyscrapers, shaping the characteristic setbacks of the 1920s.

Myths, realities, symbolism

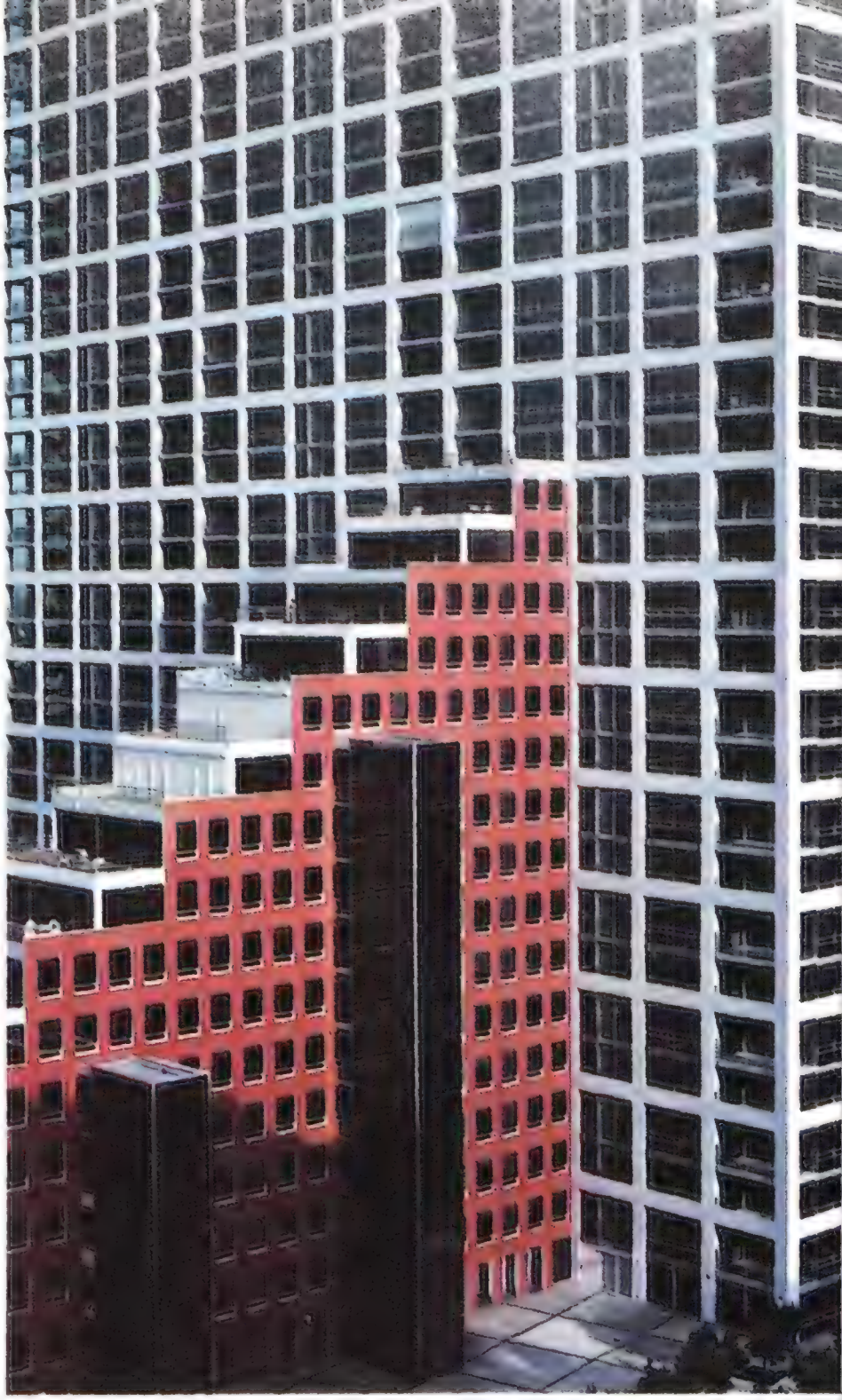
The period between the two world wars marked the golden age of the skyscraper, when it assumed a role of public symbolism and inspiration, when it transcended simple architecture to become landmark. Who remembers the designers of the two great New York towers of this period, the Chrysler and the Empire State Buildings? While it watched in fascination as these towers raced to the sky, the public remained innocent of the identities of William Lamb (Empire State) and William Van Alen (Chrysler).

The raw height of these buildings was their claim to glory and each did its best to assure its dominance. Chrysler's 27-ton stainless-steel spire was secretly assembled inside the top of the building, then raised in one final, grand gesture to push its height to 77 stories and 1,046 feet, and beat out a rival tower on Wall Street. The dirigible mooring mast on top of the Empire State was added for similar reasons: to give it, at 102 stories and 1,250 feet, a comfortable margin over present or future competitors.

The Empire State was begun in 1929, just days before the stock-market crash. The Depression and World War II left it largely unrented for years—the "Empty State Building" wags called it—and it served to mark the end as well as the culmination of the great skyscraper age.

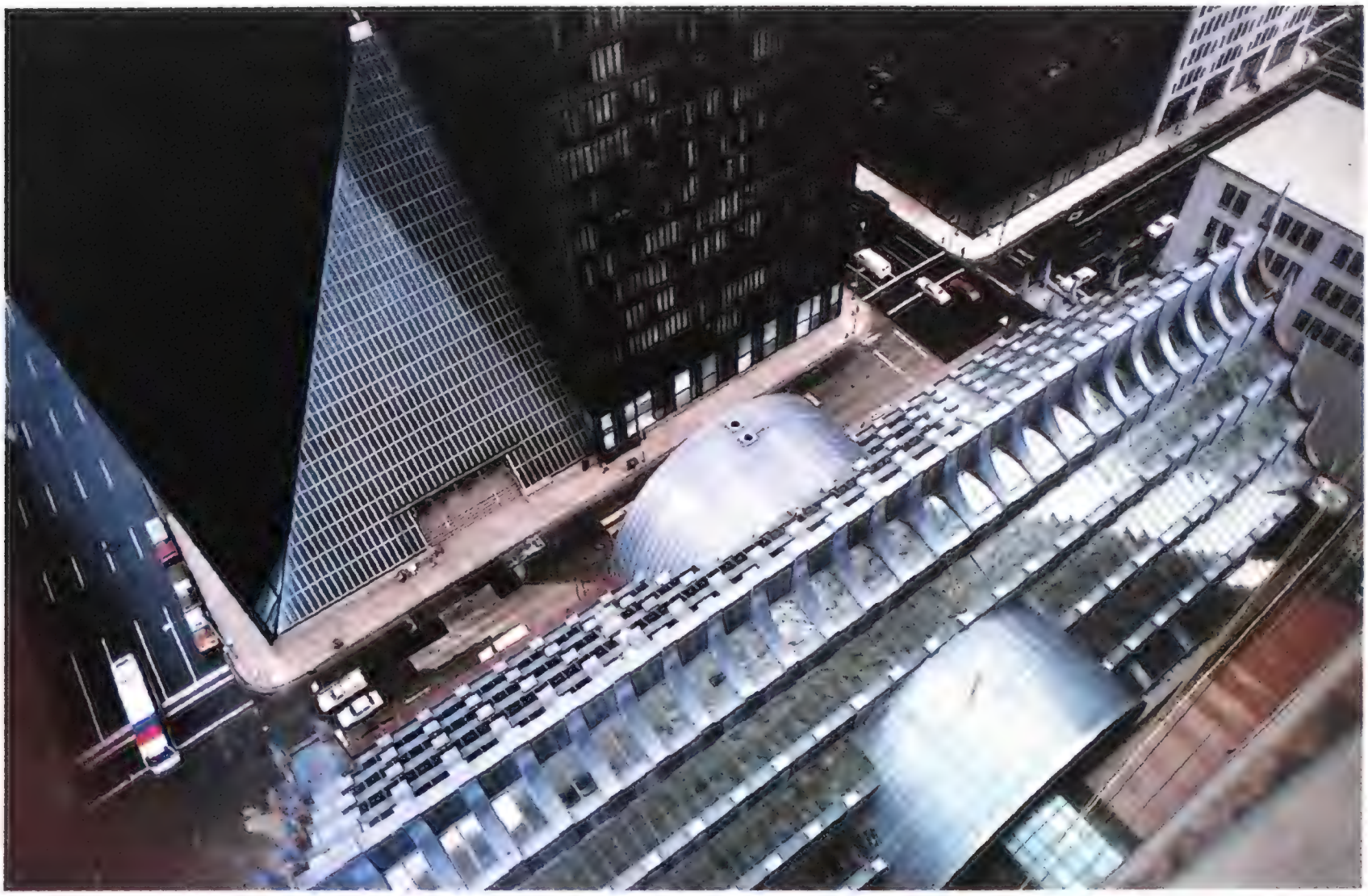
The Empire State seemed to push the art of skyscraper building—and by implication, human capability—to its limits. The echoes of its symbolism were of overreaching and hubris; the building suggested some form of human cheating of natural law. It is, for instance, located on the Atlantic flyway for migrating birds, and in the past whole flocks of birds periodically ran up against its windows and were killed. (Turning off the building's floodlights during the migrating seasons solved this problem.)

People revel in the myths and realities of skyscraper disaster. The famous crash, in 1945, of a B-25 bomber into the 78th and 79th stories of the Empire State touched a basic fear: that of being trapped in the top.



In Miami, Arquitectonica's Palace includes terraced condominiums stair-stepped down to Biscayne Bay.

Helmut Jahn's Xerox Centre, Chicago, emphasizes pattern and curve, has skin of aluminum and glass.



Bird's-eye view shows slanted "greenhouse" galleria of Johnson and Burgee's Pennzoil Place in Houston.

In foreground is gabled roof of low section of their Republic Bank Center. Round structure is entry arch.

The Empire State was also the appropriate place to lodge King Kong (p. 50), the very image of the primitive reintruding itself into modern life. And Hollywood persists in using skyscrapers as settings for disaster films—even though buildings put up today are better protected from earthquake and fire than ever before. Coatings for girders, sprinklers and fire doors effectively localize any skyscraper fires and make any towering infernos highly unlikely.

The influential skyscrapers of the 1950s and '60s could never claim the fame of the Empire State. Their Bauhaus-style Modernism lacked the dramatic tops and varied masses of the pre-war buildings. But by the early '70s, some architects were curving or otherwise shaping their glass walls, others borrowing openly from the detailing of the past, still others working to elaborate the patterns of the glass skin.

The reaction to "crew-cut Modernism" looked initially to minimalist art for inspiration, turning the simple box into a more dramatic prism. I. M. Pei & Partners' John Hancock Tower in Boston, for instance, is a sharp-edged, reflective rhomboid on the city's skyline. Johnson and Burgee's Pennzoil Place employed two interacting prisms. In the United Nations Plaza hotel and office complex, Kevin Roche set tilted roofs in a procession toward the top and met the street level with tilted and overhanging canopies. Johnson and Burgee's Post Oak Central towers in Houston (p. 46) employ rounded corners and a slick, sleek Art Deco look. More recently, Helmut Jahn's proposed North Western Terminal Project for Chicago puts the curves not on the corners but on the cornices, giving the structure the 1930s feel of a Philco radio.

The architects of the new skyscrapers begin, in a sense, at the top. They are interested in drama, in theater, and the top is the most dramatic spot. For the architects of the International Style, there was no roof but the flat roof. "Those buildings," says Cesar Pelli, "only reflected the realities of the structure. That is not sufficient. The building has other responsibilities. The top is a responsibility of a symbolic nature."

Pelli's response to the responsibilities of the top is seen in his plans for Battery Park City in lower Manhattan, where he tops a series of buildings, one with a dome, one with a pyramid, a third with a gabled ridge.

The most famous top of recent times, of course, is

Johnson and Burgee's "Chippendale" pediment for the AT&T Building (pp. 44-45). That top, Johnson says, was "inspired by the very narrow site." Classical architectural theory suggests a pediment as the proper way to conclude a wide, shallow building. By choosing the broken pediment that he did, Johnson was not resorting to furniture design, but to a traditional architectural strategy that had also inspired furniture.

In the energy-conscious mid-'70s the skyscraper came under criticism for its wastefulness. Architects for a time promised a change. They talked about building windows that opened, and taking advantage of natural sun and shade to temper the building's environment. A few buildings—like Kevin Roche's 1975 United Nations Plaza Hotel—did have operable windows, but more often new skyscrapers used sun-filtering glass and computerized climate controls. Open windows would confuse the computers.

A new look at ground level

The longest-standing criticism of the skyscraper has concerned its failure at ground level. It was fine for skyscrapers to outline dramatic forms visible from a distance, Lewis Mumford wrote, but what about the people on the crowded streets immediately below, to whom the tops were invisible? Mumford and others found skyscrapers bad urban citizens, taking little notice of their surroundings, overloading streets, sidewalks and public transportation, throwing acres of shadows into the streets or sending drafts surging around corners.

When the plaza of the Seagram Building was finished, recalls Philip Johnson, who collaborated with Mies van der Rohe in its design, "Mies said that he never dreamed that people would want to sit there."

William H. Whyte, the author of *The Organization Man* and *The Last Landscape*, recently spent a decade studying skyscraper plazas and other small urban spaces. Whyte and his assistants used time-lapse photography and graphs to see just what makes a public space friendly to its users.

One of Whyte's first and least surprising discoveries was that the bases of skyscrapers are used mainly by the people who work in or near them. They are the living rooms of the buildings, used at lunch and during breaks. If there is little that architects can do to the inside of the towers, where clients may deploy their workers as they wish, they can at least improve the public facilities they all share.

Skyscraper plazas arouse a delicate sense of space psychology, Whyte found. People never crowd them; they adjust to the available space, leaving gaps on benches and ledges. They use them primarily for conversations; however much light, seating or planting

Jahn's Southwest Center, proposed for Houston, would be 1,352 feet high, including 130-foot pinnacle.

Fiftieth anniversary of movie *King Kong*, last April, saw inflated Kong back on Empire State Building.

they offer, they must above all be comfortable places to sit and talk. Successful plazas are full of people talking in groups of two or three. Water is an especially attractive feature: fountains or cascades can sometimes serve as a kind of "white noise" covering over conversations and granting privacy.

The plaza trend of the 1960s was matched, beginning in the mid-'70s, by the "arcade" movement. The arcades not only protected their users from the weather, but offered shopping and eating facilities. If the plaza has been borrowed from the European square, the covered arcade also has European prototypes, from Milan's Galleria onward. Some aspects of the arcade movement were successful; others seemed simply to transfer the deadliness of suburban malls to the bases of skyscrapers.

For New York's Citicorp Center, which opened in 1977, Hugh Stubbins created a huge silverized tower on legs. Beneath the legs is one of the earliest shopping and recreational areas of its type, and one of the most popular spaces in New York.

In the IDS (Investors Diversified Services) building in Minneapolis, done slightly earlier, Johnson and Burgee experimented with a large covered garden, with shops and skating rink, at the base of a faceted and notched tower. Whyte calls the IDS public space one of the finest in the country.

The skyscraper's renaissance is also a return—a return to the days when each new building sought to surpass its predecessors. The grounds for the competition, however, have shifted, at least for now, to the design of the building rather than to its pure height. But, as Henry James realized, the skyscraper is all about reaching and overreaching.

Engineers have recently revived and declared feasible the concept of the mile-high 500-story skyscraper that Frank Lloyd Wright first proposed in the 1950s. Architect Mario Miqueli has designed a visionary 180-story helix-shaped building.

But even if such towers are built, they may not be the tallest. Perhaps the ultimate high-rise would be Arthur C. Clarke's suggested "space elevator," a building that would stretch from the equator to the height of geosynchronous orbit, 22,000 miles above, and which would function as a huge matter mover to lift materials into space. The idea may sound crazy, but it was Clarke who first described the idea of using satellites in geosynchronous orbit for communications and weather forecasting. The superstructure he proposes would not just scrape the sky, it would escape into it.

Atrium of New York's dramatic Citicorp Center has become one of Manhattan's favorite gathering places.

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By William H. MacLeish

The Silver Whistler

Poet and playwright, Librarian of Congress, Archibald MacLeish is remembered by his son

Shortly before he died last year, my father and I were sitting in the book room of Uphill Farm, the house he and my mother bought the year before my birth and which had been—except for each other—their greatest love. November blew hard across the lawn and sunken garden and on out east toward the far cone of Monadnock. Ash logs burned in the high and shallow fireplace. My father, terribly thin by then, wore a coat of Hebridean tweed that had fitted him well enough across the deep chest and small waist but now hung like a bag. He was going over some papers, and he handed one to me.

It was a poem. I could see from an attached note that it was going to be published in an anniversary issue of *The Paris Review*. The poem was short, and it was called "Whistler in the Dark":

> George Barker, British poet,
> writes a eulogy of Dylan Thomas:
> calls him whistler in the dark
> and great because the dark is getting darker.
>
> Is it? Was the dark not always darker?
> Have we not always had these silver whistlers?
> Listen! . . .
> That's Chaucer like a bobolink.
>
> I think it's not the darkness growing darker
> makes for whistling well. I think
> it's knowing how to whistle.
> Listen!
> That's Dylan trilling like a lark.

At the top of the poem, he had written "Bill, from his father." There had been a few other such sudden gifts from him, so swift in the giving they outran acceptance. A dozen years ago, he sent me another sheet of paper. Over on the left, in a twitchy hand, were the words "Archie from Father." On the right, my father had written "Bill from Dad." And typed below, the ink going, was Emerson:

> "It is easy in the world to live after the world's opinion; it is easy in solitude to live after our own, but the great man is he who in the midst of the crowd keeps with perfect sweetness the independence of solitude."

I read "Whistler in the Dark" and I went to my father as he sat in his chair. I said—I was barely able to say it—"Do you know what I owe you?"

He put a hand up to my face and smiled and said in a voice that was years younger: "Only your life."

I stood, caught, above him, and then he saw me struggling with that and released me. "And I could ask of you the same unanswerable question."

When he was in the hospital, my mother and I sat beside his bed, and a connection came to me. Whistling in the dark, Dylan Thomas and what he had said to his father:

> Do not go gentle into that good night,
> Old age should burn and rave at close of day;
> Rage, rage against the dying of the light.

And the end of it:

> And you, my father, there on the sad height,
> Curse, bless, me now with your fierce tears, I pray.
> Do not go gentle into that good night.
> Rage, rage against the dying of the light.

I cannot be sure, I cannot begin to be sure. It is hard to know if a man is raging when he is muzzled by an oxygen mask. Just as it is hard to think of Emerson and perfect sweetness when a body, big-boned and strong in its 90th year, fights to go on. But I sensed—others in the family sensed—that he had decided to

Color photographs by Cary Wolinsky

"Do not go gentle into that good night," *The Poems of Dylan Thomas*. Copyright 1952 by Dylan Thomas.
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In the early 1930s, Archibald MacLeish revels in the sun on the Massachusetts farm that was his holdfast. Mornings were for writing, afternoons for "cuttin' and sawin' and mowin' and suchlike."

'She sang while my father sat in a leaky room, trying to teach himself Italian. . . .'

die, that he was following a course inward. Not raging. He did not bless me with curses. His last words to me were "You go along." I asked, "Back to Conway?" Back to the farm, back to Ada, his wife, my mother? And he whispered "Yes." I went back. I am here in this place that I owe him as often as I can be, this old town in the beginning of the Berkshire Hills of Massachusetts.

Conway was once part of Deerfield, the commons for that older and more historic village, "nine miles from ye River into ye Western woods," as the grant read. It was once on its way to growth, with waterwheels along the South River turning lathes and saws and punches. But the factories moved south and farms failed, and when my parents first came here it was the cellar holes that saddened them.

Conway was where my father's maternal grandfather, Elias Brewster Hillard, shepherded his last flock. Reverend Hillard was an outspoken man, and when he spoke out on such sins as the manufacturing of shoddy uniforms for the Union Army, he was invited to leave one parish after another. My father's mother and some of her siblings had visited their parents in the Conway parsonage. An aunt had bought a place in nearby Ashfield. When my mother and father came back after six years in Paris, he of writing, she of singing, they went to the Ashfield house and started looking for a place to settle down.

"We wanted two things," my father told me one hot July afternoon three years ago, under the apple tree on the western terrace. "We wanted beautiful elm trees and a running brook." He was in a tearing hurry to get back to work, to writing. They found a place way over west of Conway that had been a poor farm. "It had no elm trees and it had no brook," my father said, "so we bought it."

My mother joined us under the tree. "That place was the last thing I wanted," she said. "I cried all the time about it." She smiled the smile that meant she was about to let her fancy loose on a story. "And one day, when I was busy crying, a friend told me about a house in Conway she had ridden by and it had a 'For Sale' sign out in front with the 'S' backwards. My friend said that they had put some things on the house but that they would come off easily." My parents went and peeked into the dirty and lovely rooms of a farmhouse framed probably late in the 18th century. "So," said my father, "being very cautious and careful people, we proceeded to buy this house, too."

There they were, with two houses and no money. They had spent $10,000 on two houses, about half and half: not enough for a down payment now, but all they had then. Luck smiled. A man who always wanted the poor farm, and was mad as a hornet when it was sold, took it off their hands for more than they paid for it. They sailed happily back to France while a contractor took off the "things"—columns and porches tacked on by previous owners, a Southern family so lonely for home ground that they hid the old house behind antebellum froufrou—and built a lovely gazebo over their well.

My mother and father came back late the next spring, she heavy with me, and settled into a half-finished mess. They lived among workmen tearing away plasterboard to get at

MacLeish house at Uphill Farm is in the Berkshire town of Conway.

In 1941, author and his father head for home after clearing brush.

It was used as a summer place until it could be renovated, insulated.

They fantasized as they worked, so that the chores became adventures.

magnificent mantels, scraping paint down to the soft glisten of good wood paneling beneath.

It had been my mother who was the recognized MacLeish in the early Paris days. She worked with Nadia Boulanger, the mentor of musicians, and she sang, this young American soprano, the works of Fauré and Poulenc and Stravinsky and a young compatriot just coming into the light, Aaron Copland. She sang while my father sat unrecognized in a leaky room, trying to teach himself Italian so he could read Dante in the original. For my mother, the architect in Conway proposed and built a music room, a brick wing with a huge room for her singing and servants' quarters on the second floor. "At that time," my father said, "you expected to have servants."

Work went well into the fall, when my parents discovered something. "The place was beautifully constructed," my father said. "Those beams up in the attic and the beams in the cellar were laid perfectly to their task. It was built on a ledge and always smells sweet in the spring, no matter what happens in the winter." But ah, winter! "We were so damn ignorant," my father said. "Nobody ever talked about insulation in those days, so we never bothered to find out if the house had any. It didn't. Not a bit. And when the northwest wind hit the wall of your room, it came right on through and made the hair on your head wave as you lay in your crib." There was nothing for it but to move the family to my paternal grandfather's place outside Chicago, huge and so ugly in its Victorian excess that it was beautiful. And snug.

We went back again. My mother's garden was taking shape in what had been the sunken quadrangle of an old barn foundation just east of the house. From then on, it would be the ease of our eyes, the clock of our seasons. That autumn, came ruin. My father's father had died in 1928, he of Emerson and of considerable wealth amassed as the founder of the retail end of Carson Pirie Scott, one of Chicago's largest department stores. But in 1929 the economy came apart, and the business at hand for my father was the basic one of keeping things going.

"There were no jobs around here," my father said, under the apple tree. "I had to do something, so I began raising turkeys." He read and read, this lawyer turned poet turned farmer. He found no turkeys had been raised on the place recently, so there did not seem to be too much danger from blackhead or other turkey diseases. He raised the birds and killed them. He advertised them among his friends as Cricket Hill turkeys, fed on crickets and milk. They called the place Cricket Hill Farm—until they found that there was a Cricket Hill at the other end of town and that they were on the top of Pine Hill. "We had an old hearse of a Cadillac," my father said. "It had a sort of deck that let down between the front and back seats, and your mother and I loaded those turkeys right up to the tops of the doors and drove to New York and sold them to rich friends of ours."

"Don't say it wasn't a crazy life," my mother said.

They made several hundred dollars out of the turkey trips—until the foxes moved in. They were less fortunate with the cows; some disease got them and they all had to be killed. The dogs got the sheep. World War II got the chickens. We ran out of feed for them.

Things couldn't go on like that, and they didn't. Henry Luce was starting a new magazine, and he asked my father to work on it. Luce was even willing to give my father the time he insisted on having for his poetry, and Archibald MacLeish went off to New York to write pieces

The author, who last wrote for SMITHSONIAN *on the Coast Guard (July 1982), is now working on a book about Georges Bank.*

'But he turned out God's own quantity of pieces, around a hundred by his reckoning. . . .'

for *Fortune*. "It was the greatest single stroke of luck we ever had," my father said. It probably was. But there wasn't enough money for all of us to live in New York, so for the next decade I spent the cool seasons at my grandfather's house in Farmington, Connecticut.

This is a family of fairy grandfathers; without them, we wouldn't have made it. The Chicago one put my father through law school and supported him in Paris while he took that wonderfully long shot at becoming a poet. The Farmington one housed my governess and me (my brother and sister went away to school after a few years) through most of the Depression. My mother did what she could to divide her time between my father and us, and he came up on some weekends, but after a while I got the feeling, not uncommon in such cases, that I was adopted.

Some writers, including friends like Ernest Hemingway, did not take kindly to the appearance of my father's name on the *Fortune* masthead. Some took after him, personally and in print. But he turned out God's own quantity of pieces, around a hundred by his reckoning, in the falls, winters and springs between the years 1929 and 1937, when Harvard asked him to take on the directorship, at a pittance, of the new Nieman Fellowship program for journalists. "It was a great advantage to me," my father said, "to be in a different category altogether from my novelist friends. They lived by their pens in the real sense of the word. The writing that we lived by was all assigned stories, and I treated them as such. But during the time I was at *Fortune* I produced more good poems than at any other time of my life. So it was pretty hard for me to assume that this was selling out."

My father had his workhouse by this time, a tiny stone saltbox on a swell of land a couple of hundred yards east of the house (p. 65). And he had his schedule: four hours there every morning, seven days a week. The work was artesian: "Einstein"; "New Found Land"; "Conquistador," which won the first of three Pulitzers; "Public Speech"; "America was Promises," many others. "This place and Paris were where I did most of my work," my father said. "That stone house is a wonderfully quiet place. Occasionally a bothersome dog down on the Shelburne Falls Road, but very little even of that. Once you get going there, you keep on going—pick up from one day to the next, which I find is one of the great problems."

Kenneth MacLeish eggs his brother Bill into a belly flop off the board.

He was very much the morning writer, eight to noon, where writing "ought to be, in my book. I've heard people talk about the poet up in his attic at 3 o'clock in the morning. You can be damn sure nothing ever came out of that." Working as he did, he said, "you could get a rhythm not only for the work but for the day. You could work as long as you could, which is about two and a half or three hours with me, and have the afternoon for work around the place, necessary work but work that was very good for you." He switched to a hill accent: "cuttin' and sawin' and mowin' and suchlike."

He came back by himself a few times during the winters to work. He got a big fire going in the book room, the one looking out on Monadnock. A friend came up from town and cooked a set of meals and left them for him. He could listen to the drafts shrieking under the doors as the fire drew them, to his old white police dog, Finn, sighing on the hearth. It was fine, he said. Was he lonely? "No," he said. "This is the one place I never feel lonely." The slightest break in the voice. "You have the company of the house."

Uphill Farm remained a summer place until well after the Second World War, when there was enough money for insulation and renovation. And it was in the afternoons of the summers of the late '30s that I came to know my father, mostly by working with him. I was too small to help earlier, and later, in the summer of 1939, came a break that would last until the late '40s.

"Mr. Roosevelt," my father said, "decided that I wanted to be Librarian of Congress." My parents were in Washington most of the time during the war, as my father wrote speeches for the President and took on one in-

Dean and Alice Acheson were frequent visitors at Conway. In this painting by Mrs. Acheson, the family and guests play croquet.

telligence and information job after another, ending up as an Assistant Secretary of State with the ticklish assignment of helping to put together the United Nations Educational Scientific and Cultural Organization. There followed a severe bout of Potomac fever. "I'd enjoyed power for the first time in my life," my father said. "I had had quite a taste of it, and I had to make a bridge and get back to being myself." It wasn't until the early '50s, when he was well into a long career of teaching writing at Harvard, that he and my mother felt they had come back to the hill. By then, we children were away on our own courses.

I have a few early memories, myths perhaps, of my father, of how he looked, in his drawers, tramping purple grapes for wine, of how he once carried me out on the terrace to look at a melon moon full over the meadow. I do know that when I was very young, in my grandfather's house in Connecticut, my father took me walking with him along the Farmington River. We began to play that we were in darkest Africa. He called me Mr. Stanley and I called him Dr. Livingstone. The name he gave me stuck for the rest of my life. And when I was old enough, in those afternoons damp with clover and timothy cooking in the heat, he and I cleared brush and told each other that the saplings around us were Pygmies closing in for the kill. I hoed the big garden across the road with him and mended barbed-wire fences and burned tent caterpillars out of the trees, and I came to love the smell of his sweat.

When my parents bought the place, the sales agreement stated that the

'An artist of the spoken word as well as the written, a man in the line of Celtic bards. . . .'

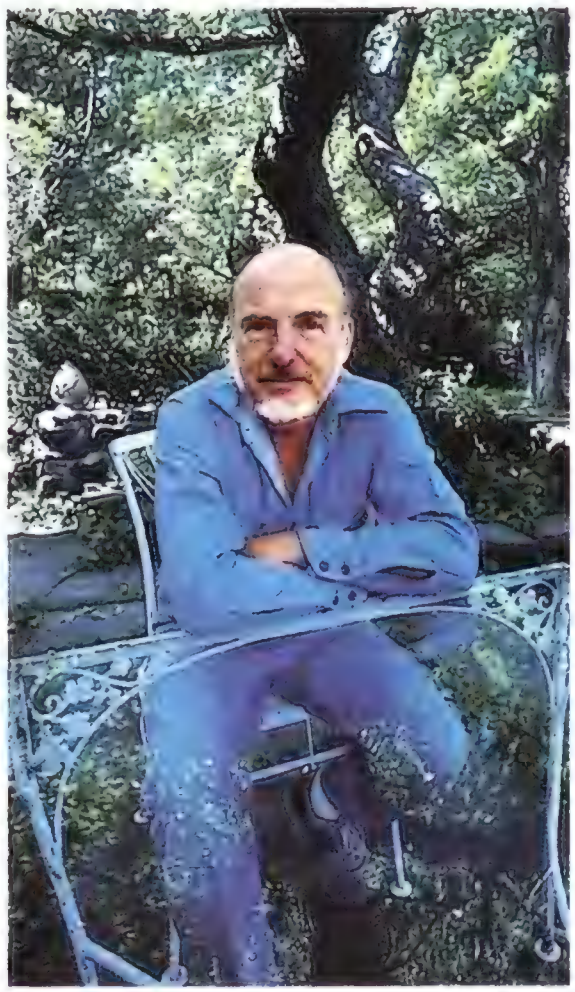
transaction was "free from all encumbrances except taxes for 1927 and certain pasture rights for the 1927 season, and the right of one Bush to cut some hay." One Bush was Pa Bush to us, an old farmer of French Canadian extraction living at the foot of our hill, who fought his rheumatism and kept farming. Pa and his son Ray and his wife's blind and extraordinarily strong relative Charlie Pear hayed our fields for years. I can hear the slick shuttling of Pa's mower, the click and stumble of his horses on the sharp hillside, see him sawing on the reins, yelling "Come up in there, goddamn you!"

I started with a pitchfork, cocking windrows, then learning to fork up the cocks to the man carefully building the load on the wagon, keeping the corners firm and high. The heat leaned in and the horses lathered and twitched at the flies. We drank water laced with vinegar and ginger out of a milk can kept cool in the well inside the old gazebo. We raced thunderstorms to the barn, standing in the doorway to let the rain sluice chaff and sweat off our shoulders while the horses whickered and stomped on the thick wood floor. Once, a hurricane was coming, the big one of 1938. "Ray and Charlie Pear came up to the barn," my father said, "and the doors had been jammed open by the wind. I think the barn would have gone. But Charlie got his back where he wanted it to be and gave a couple of shoves, and the barn doors moved."

The foundations of what I perceived my father to be were laid about then. He was one of the most lovable men I have ever met, with such warmth, with a surprising amount of natural modesty. Yet he was a secret man, as tightly chambered as a nautilus. There was the chamber of the athlete, the water-polo player, the Yale football player whom a Harvard freshman coach had called, more in admiration than in anger, "the dirtiest little sonofabitch of a center" he had ever seen. The chamber of law, the choice of his life until, walking home late on a cold Boston winter night, he chose the real one. The chamber of his art, by far the most secret. The chambers of politics, of statecraft.

Somewhere along the line he had become famous. People all over knew about him, although what they knew puzzled me. What seemed to strike them as immensely odd was that a poet could go after an opponent on the line or in a political scrimmage. That was a given to me. What I found difficult to understand was how my father could talk to me so passionately about his verities, the pillars of his soul, and yet remain hidden himself. "Live your life," he would say to us. "Don't let your life live you."

He talked about Mr. Jefferson, the Republic, freedom and the responsibilities of free men. He was an artist of the spoken word as well as the written, a man in the line of the Celtic bards, and he sang as he talked. His voice was so clear it sounded higher than it was, and he used rhythm and repetition that moved me more than any speaker ever has. But he never showed me where the words came from. In that sense, in that remove, he was more a figure of a father than a father, not so much a parent as someone on whose voyage I was a passenger. I was angered by the shadow he threw. Yet in the end, we were beloved friends.



The author rests under the apple tree where he and his father talked.

I don't think the family was particularly close at Conway. Everyone was coming or going, everything had the impermanence of summer. Not even names seemed to stick. When he went to enlist in the Navy at the beginning of the Second World War, my brother Ken found he didn't exist. The name on his birth certificate was Archibald MacLester. I was born Peter and my name was switched early on to William when my Farmington grandfather grew sad about not having anyone to carry on his name; for a long time, I thought Bill was a nickname for Peter. My sister escaped with a mere Gallicization, from Mary to Mimi.

We were, like most children of most strong parents who depend on each other hard and on others not at all—to steal a line from my favorite essayist, Edward Hoagland—on the rim of remarkable lives. Although not always.

Early in the '30s, my father and Pa

Bush and his horses built a dam to create a pond better for swimming and diving than the small lake the Boy Scouts had built on the property. It had a diving board, with which my father, with only small success, tried to lift us to the levels of his skills with the swan dive and half gainer. I remember the look of shock and hurt on his face as I shot past him one afternoon up the length of the pond. I was wearing flippers. Without them, I lost to him in a crawl sprint until he was well into his 60s.

On hot July nights we all swam naked in that pond in the sweet, black water. On hot noons, we picnicked there on gin-and-grapefruit-and-mint cocktails and hamburgers my father cooked that were crusts on the outside and all juice in their innards. On Golden Bantam corn and salad and fresh blueberries from the garden. After, we lay on the ground, heads propped on a convenient leg or shoulder, looking up at the leaves in the light.

My brother loved to hunt and fish, and he taught me. We both had a bloodlust, and we killed far more than we needed to or should have. We even hunted each other, with bows and with padded arrows that didn't break the skin but that hurt terribly when they hit. Somewhere in midlife we both lost the lust, perhaps because we had simply killed too many woodchucks and grouse and deer, and some sharper instinct from way deep had risen to end it. I carry the shame of the excess in one memory—a kit fox, half his head shot away, whimpering himself to death at my feet. I was 17 and I stood over him and wept.

I think we killed as we did to bother my father, to rebel. "I hate killing," he said out on the terrace. "I hate seeing things killed." Even the animals that supplied those delectable hamburgers. Even Harold the Mere Steer. Even Toothsome (another beef): "He lived in a little yard by the side of the barn. He was a very mild creature. I couldn't bear it when he was shot."

Ada MacLeish sits with her great-granddaughter, Nora Zale, age 1.

Life here was very much a life of the senses. Meals were beautifully planned and prepared. My mother always had servants, even in the worst times, and she ran a kitchen that could produce dishes that would take the blue ribbon from Cordon Bleu. We laughed most at table—at first at malaprops from the young. I was convinced that the man to be remembered at Little Big Horn was General Custard, my sister that John Steinbeck's greatest novel was *The Wrath of the Grapes.*

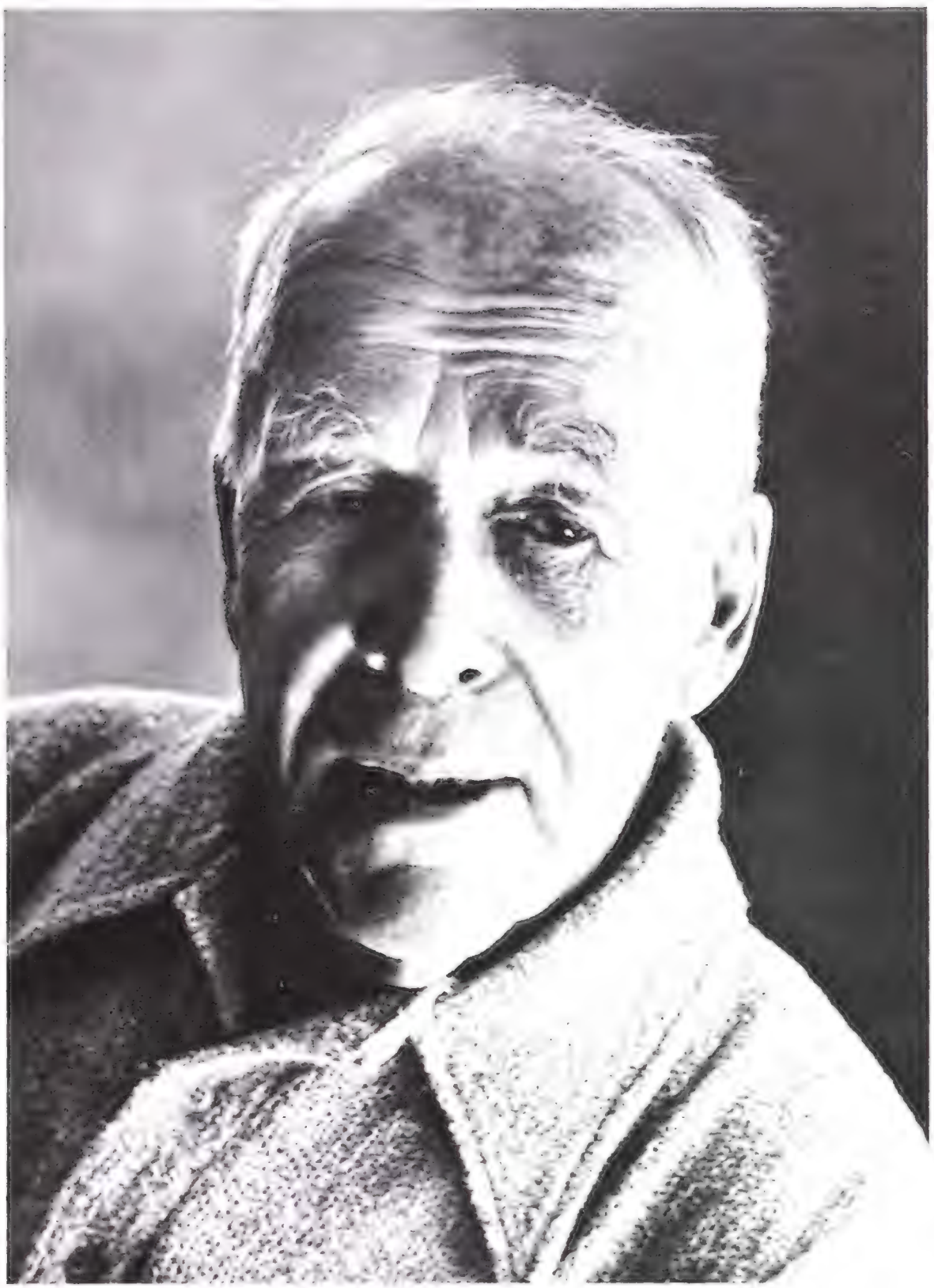
Because we spent so much time apart, tales of our lives together became talismanic. One story would spark another in the candlelight. Do you remember when the pen gate got opened up at the barn? When that new maid came out on the terrace where Mom was entertaining guests? She was all gussied up in black and lace, and she stood rigidly at attention and announced: "Madam, the pigs is here."

My father got his voice from his mother, a tiny woman with a pleasant face and fine mind and a strong will. She, Martha Hillard MacLeish, Granny Patty, visited us once in a while in the '30s. When she did, she read *Uncle Remus* to me in a rich alto voice that could raise to a holler: "Bred en bawn in a brier-patch, Brer Fox. Bred en bawn in a brier-patch!" My father read aloud from *The Boy's Percy,* from *The Sword in the Stone,* the wonderful tales of King Arthur's boyhood, and the "Battle of Chevy Chase." Right through our lives together, we would start each other off. "The Percy out of Northumberland," one would say. "And a vow to God made he." "That he would hunt in the mountains of Cheviot," the other would chant, "within days three." And together, "In the mauger of doughty Douglas, and all that ever with him be."

My father would read late drafts of his poems to my mother, and I listened to that magic. Later, he found stories in a collection of popular tales from the West Highlands. One, in particular, stays with me now. I memorized it: "The Brown Bear of the Green Glen." The translation from the Gaelic carried some of the word song from the original, as when the bear, hunting supper for the son of the King of Erin, "makes that wonderful, watchful turn and he catches a roebuck."

I can remember my mother singing. There is something of it left in her speaking voice now, at 91. Her voice carried music the way a spill from a spring carries water. My father told me that one day he came upon a colleague from *Fortune,* standing outside the music room by the open French doors, listening, her shoulders shaking with her crying.

My mother sang for us, too, in the evenings after supper, not so much from her repertoire as from her store of songs friends had given her: songs



Jill Krementz made a portrait of the Pulitzer Prize poet in 1970. "In the end," says his son, "we were beloved friends."

taught her by James Joyce, like "The Brown and the Yellow Ale"; a song brought by my godfather, from a collection of music sung by black Union troops: "I know moonlight, I know starlight, I'm walkin' through the starlight. Lay this body down." Carl Sandburg sent her a copy of his *American Songbag* with an inscription: "Sing 'em: sing 'em by yourself, sing 'em with Archie and may your rare singing voice stay with you long as you have wishes."

The folk songs opened the door for the rest of us. My brother and I played the recorder and the guitar. We would improvise together, each knowing what the other would do without knowing, and the rest of the family sang with us. "Sam Hall." "Dublin City." Songs of the Spanish Civil War, the Republican cause my father worked for so passionately. Later, Ken and I took up the bagpipes, and we would play them outside, because my mother hated loud noise, and just as we ended, the hills would give back the last notes of "Piobeareachd of Donald Dhu" or "Amazing Grace."

My godfather was Gerald Murphy, the painter, who, with his wife, Sara, was part of and host to the Lost Generation in the Paris of the '20s. Gerald and Sara came to the farm often before the war. So did old friends like the Achesons, the Frankfurters—we called Felix the "Little Justice"—John Dos Passos and his first wife, Katy. All were public people everywhere but on this hill. The schedule always held. My father went to his workhouse in the mornings. There was swimming and then lunch, and then a long lazy afternoon or perhaps a game of scouts in a patch of woods up by the Boy Scouts' lake, or a fierce game of croquet (p. 59) or one of its derivatives. Then cocktails on the terrace and those dinners, and then down to the music room for singing and talk.

My mother made those weekends, as she made much of the life at Conway, a time of great fun and high good taste—in the midst of which my father could always find Emerson's, his own, independence of solitude. She had given up her professional singing. "I couldn't leave the family, you know," she said under the apple tree. "That was all there was to that." I'm sure that was not all there was to that at all, but I have never heard her talk of the price she paid and I don't expect I will. She made up for some of the loss in those weekends, creating perfections of food and flowers. She kept an eye on everything. When there was a hole in the conversation, she spotted it and moved to darn it with her wit.

I will not forget gathering coral mushrooms with my father and Dos Passos in the wet September woods, and cooking them over the fire in the

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Car and Driver, July 1983

'That,' said my father, 'was just about the most satisfactory thing I ever did in my life.'

music room. I will not forget watching one of the most powerful men in America dancing a delicate dance of the unfolding crocus to the music of Stravinsky. And I will not forget the great bottle of champagne my godparents came with one anniversary. The next morning, Dos came down to breakfast with pouchy eyes and a poem:

Gerald brought a Jerobo-um
Very big and full of fo-um
Went to everybody's doe-um
Thank you, Gerald, glad to know-um.

"This town," my father said, "has more brooks than any other town in the Commonwealth. It's a town of old worn hills and rushing streams." About the townsfolk, he said, "We're friendly. We help each other when that's necessary. Otherwise, we leave each other alone." That was true all along. The town waited for years after my father became Librarian of Congress before asking him to serve on the library committee. "I think they probably thought I knew enough about libraries," my father said. "It's just they didn't want to intrude."

We were tolerated in the beginning. My parents were summer people: a couple from Paris in a town in the western woods. But the older they got, the longer they stayed on the hill, going south only in the bite of winter. My father worked on town problems, my mother on town flowers, and acceptance came. The 1972 report of the town was dedicated to my father on his 80th birthday.

Yet not until the late years did my father come home in his poetry. I asked him why and got only a partial answer. He referred me to Coleridge and Wordsworth and their holdings-forth on their lakes. "They aimed at naïveté," he said, "and they achieved it. And although I like their work, needless to say, I'm a little embarrassed by the naïveté." Perhaps for him writing poems about the town and his place was simply too personal, as if he were writing about his bed. He said to me, after thinking over my question a while, "I think I will write about it. I think so. If only I could make the crossover." The crossover, as I saw it, from his holdfasts to his art.

He never did make it. He died two years after the three of us talked under the apple tree. But in the other medium he loved, drama, he had already done what he said he might do in verse. In 1967, for the town's bicentennial, he wrote a play called *An Evening's Journey to Conway, Massachusetts.* It was given in the town park, and the set was designed to have the audience looking into the backyards of Conway residents. "That," said my father, "was just about the most satisfactory thing I ever did in my life. It turned out just the way it was supposed to turn out. It was supposed to be done by the people of the town, and to a large extent it was."

Stones from the farm mark graves of Archibald and two of his children.

It was a magic-lantern show with music written by a composer living in the town; it was wisps of history floating at the edge of a ball field. "Neighbors," says a woman playing one of the town's settlers. "That was the great thing, neighbors." "I'll tell you what a town is," says a man playing a giant of a woodsman from the days when it took a year to clear four acres. "It's a meeting—meeting of minds. And how do you get a meeting of minds? Meeting of men." In a Civil War scene, an orator speaks to a few men and women gathered to welcome Conway's veterans. He speaks to them of a town as a place "where the living who return from the dead and the dead who are removed from the living meet each other—the common habitation of the living and the dead."

The farm today is what it was and not what it was. The great elms are gone from the front lawn, replaced by maples. The hay barn got to sagging, so my father, a worrier of worriers, asked a farmer to take it down and put it up at his own place. With it went a way of telling when the summer was ending; you knew, when the sun set south of the barn. But my mother's garden is still here, still changing its colors in the flow of days. My mother is here, her memory shortened, but not her humor. "Here are your glasses, Mom," I say. "Good," she says. "Now where are my eyes?" The cows still graze in the meadow, leaving the junipers to grow sharply sideways. Something is ending now, completing. Sitting under the apple tree, my father said, "We owe an unpayable debt to this place." So do I,

The lines opposite are from "Epistle to be Left in the Earth," *The Human Season: Selected Poems 1926-1972.* © 1972 by Archibald MacLeish. Reprinted by permission of Houghton Mifflin Company.

as I owe him, her. But perhaps because I cannot repay, what I owe is what I will take from this place, what I will need to go along in my life.

Six years ago, my parents and my sister and I buried my brother Ken down in a cemetery of the town. My father wrote words for the minister that he could not speak himself: "Here in this pine grove, this hollow in the pines and oaks and maples, half a mile as the crow flies from the house he knew as a child, the room he loved to sleep in as a man, Kenneth has come home. Like all travelers—and he was an inveterate traveler all his life—he had more homes than one. . . . But of all his homes, this village with its meadowland and woodland and swift streams was dearest to him." When the minister finished I climbed to a knoll with my pipes (they had been Ken's) and found I could play what my brother had asked me to play, "Amazing Grace."

Now all the men in my immediate family are in that hollow, under a big maple. Stones from the farm mark them, my father at the edge of the lot, then a space where my mother will be, then Ken, then Brewster Hitchcock MacLeish, born in 1921 and dead six months later. I never knew him. But the others I knew, travelers, as I am. They do not rest there, as I see it, for rest never interested either one very much. They are, I believe, travelers still.

My father dreamed of that voyage when he was young:

. . . It is colder now,
there are many stars,
we are drifting
North by the Great Bear,
the leaves are falling,
The water is stone in the scooped rocks,
to southward
Red sun grey air:
the crows are
Slow on their crooked wings,
the jays have left us:
Long since we passed the flares of Orion.
Each man believes in his heart he will die.
Many have written last thoughts and last letters.
None know if our deaths are now or forever:
None know if this wandering earth will be found.

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Archibald MacLeish wrote about ". . . the stone house in the rocky field where I write poems when my hand's in luck."

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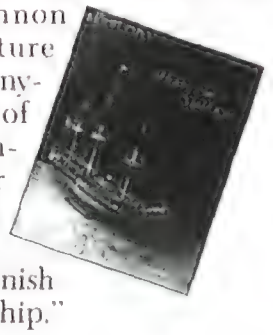

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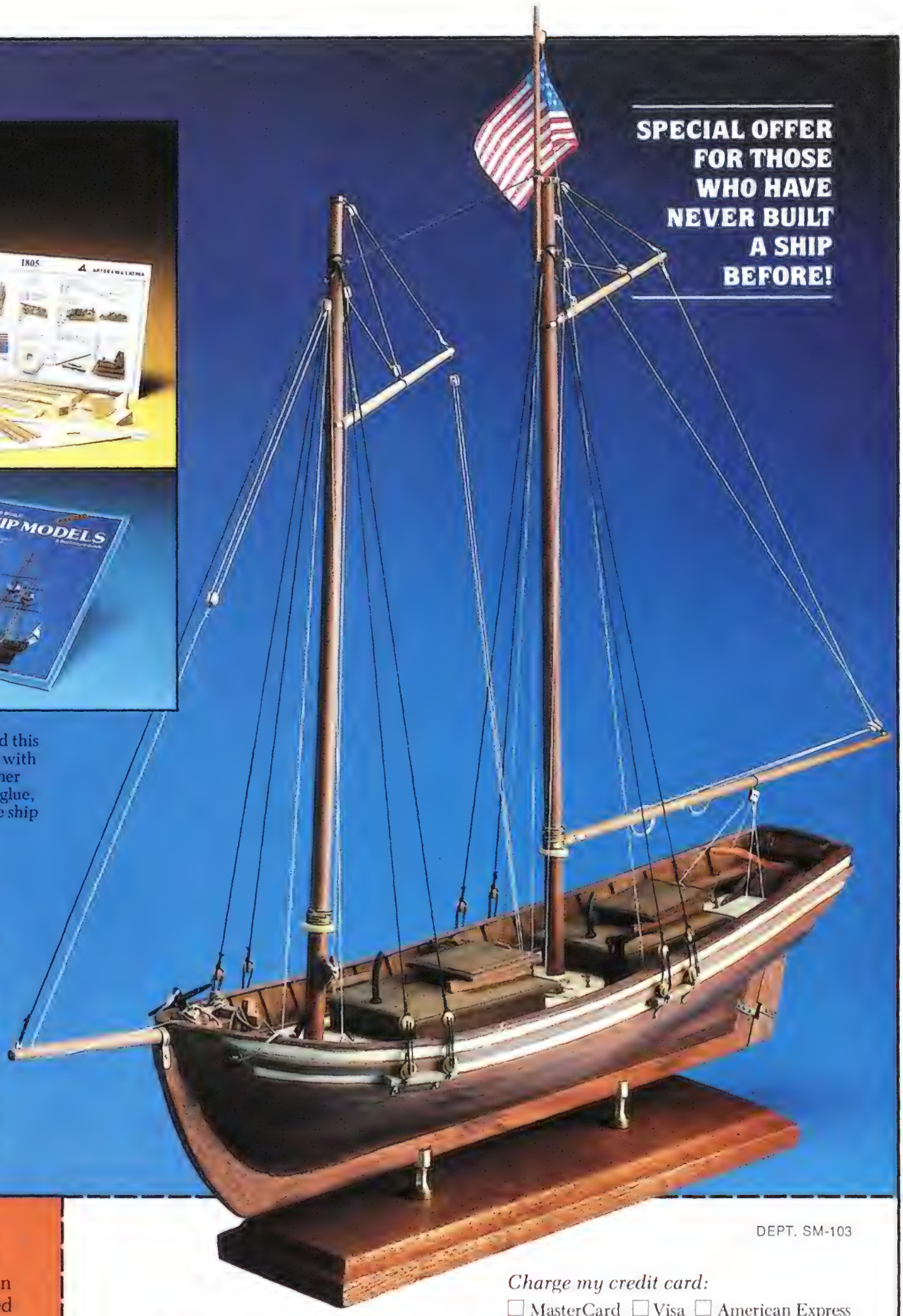

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By Richard Mathews

The summer-long bachelor party on Round Island

While female walruses are raising their young on the ice far to the north, a speck of land off the coast of Alaska is where the boys are

Their tusks thrust skyward, their bellies warmed by Arctic sunshine, bull walruses snooze companionably. Such gregarious behavior may be a heat-conservation measure evolved as species moved into cold climate.

Lying just off Alaska's southwest coast, Round Island is a magic sort of place on the rare occasions when the sun shines and the wind quits. The small island rises steeply, especially on the west side where sheer cliffs fall off into the Bering Sea. These cliffs are crowded with flocks of kittiwakes, murres and puffins, and white with half a season's excrement. The island has no trees but the summer grass is lush, and there are patches of pale yellow poppies, wild lavender geraniums, daisies and tiny forget-me-nots the color of an indigo bunting.

If you climb to a knife-edged ridge, you can see down to the beach on either side. But the beach itself is invisible; it is totally covered by walruses, a pink-brown mat stretching a dozen walruses deep from cliff base to waterline, and hundreds of walruses long out to the tip of the point: solid wall-to-walrus. Wine-sack bodies slump in all conceivable positions, long white tusks protruding from the mass at every angle. Some—most, in fact, on a warm August morning—lie torpid, eyes closed, silent, unbothered by the flies and feces coating their extravagant flanks. Others jockey for position, wallow seaward right over their fellows amidst a cacophony of snorts and clicks as jabbing tusks meet. Their grunts mingle with the shrill cries of

Photographs by Michio Hoshino

Bull walruses revel in togetherness

The beach along the island's northwest point is most popular haul-out area in the Western Hemisphere.

kittiwakes, creating a wild and unlikely chorus out of some primeval time.

All of the walruses are males, and almost all of them are sexually mature. Why the huge bulls—who apparently battle ferociously during the mating season—choose to congregate in this spectacular and reasonably amicable bachelor party remains something of a mystery. But their presence here in such numbers during a time of year when there are many hours of Arctic daylight makes the island a unique natural laboratory for research.

Among those who are studying the Round Island walruses are Jim Taggart and Cindy Zabel, two young biologists who are gathering data for their dissertations at the University of California, Santa Cruz; they also keep an eye on things for the Alaska Department of Fish and Game, which manages the sanctuary of which Round Island is a part.

Jim Taggart says there are 3,000 animals visible from the ridge—3,000 animals at up to a ton and a half apiece. Today marks the peak population so far this summer; Taggart estimates that in all there are about 12,000 animals on the island. They are here from spring to fall in a behavioral pattern so unexpected that it completely misled early observers. The walruses come here neither to set up harems nor to defend territories, nor to mate, nor to bear their young as might be expected from the example of other pinnipeds such as the fur seals of the nearby Pribilof Islands. The males, it seems, simply like each other's company.

Females and young ride the ice floes

The females with which they will mate are now hundreds of miles north, foraging from ice floes and nursing their calves. Come fall they will migrate ahead of the pack ice to winter along its southern edge. It is there primarily that these males will meet the females and mate, amidst mysterious rituals and violence in the midwinter darkness.

The number of walruses on Round Island is in constant flux, as they come and go according to a rhythm only recently elucidated by Taggart with the aid of radio tags. As the peak passes, more and more individuals can be seen lurching over each other toward the water. If one of them should happen upon a walrus-free section of the beach, he will hunch himself up on his foreflippers, arch his back and with some of the weight of his girth thus supported, swing his massive, drooping underside forward over crunching gravel. Then he will bring the hind flippers up with the rest and begin another "stride." It is an awkward, difficult matter, and one projects on him a sigh of relief when finally the water gets deep enough to assume some of the awesome burden. Once im-

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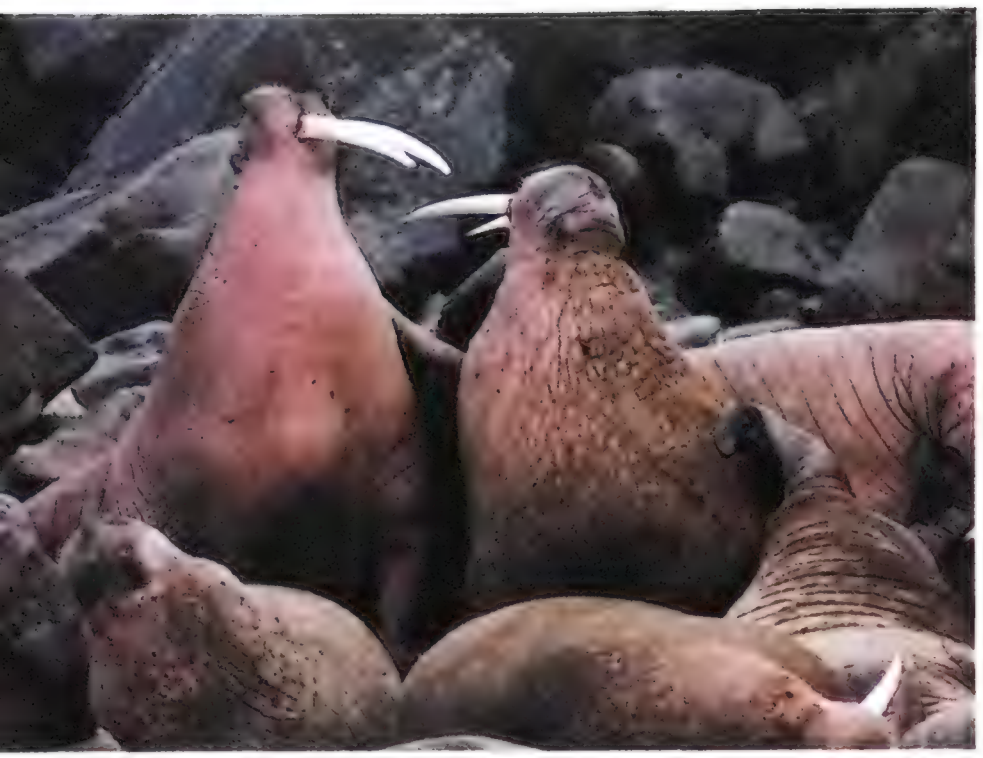

Tusking jousts establish the loose hierarchy among all-adult, all-male summer population on the island.

mersed, his monumental clumsiness dissolves into agility. Even his shoreside grunts are replaced by other, more musical sounds, including one that resembles a highly resonant bell dampened in dense fog. Tusk jabbing is replaced by amiable nuzzling encounters and rubbings with erotic overtones.

In the water by the beach, the walruses come together in groups of four, eight, sometimes a dozen, and swim southeast with a leisurely, cetaceanlike grace. Taggart's studies show that an individual walrus will spend an average of seven days at sea, then rest for two days on Round Island. The animals take many secrets to sea with them, for it is difficult and expensive to observe them there. It is known, however, that they go at least 150 miles offshore, and it is safe to assume that they feed actively because they do not feed at Round Island yet manage to stay in good condition.

Walruses feed in groups, diving and ascending in unison. Although dives as deep as 250 feet lasting up to ten minutes have been recorded, typically they are considerably shallower and about half that duration. Between periods of feeding, walruses still clustered in the water may sleep, using their basketball-size inflatable pharyngeal pouches for buoyancy and assuming straight up-and-down positions. These pouches are also used as resonance chambers to amplify the elements of an underwater language which scientists as yet know little about.

In summer the author runs a fisheries-patrol boat near Round Island. He wrote The Yukon *for Holt, Rinehart & Winston's* Rivers of America *series.*

Since Early Man hunted walruses (the flesh, though tough and coarse-grained, tastes very good and is lean), it must have been evident that the species' main food is bivalve mollusks, especially clams, but they also eat marine worms, sea cucumbers, snails, sea squirts and crabs. Fish are seldom eaten, but, surprisingly, both ringed- and bearded-seal remains have been found. It has yet to be proved whether the seals are encountered dead or killed as prey.

For many years it was assumed that walruses dug out food with their tusks; indeed, the juxtaposition of such digging tools with stomachs so full of clams made the conclusion inevitable. Taking a closer look has consumed many hours in the working life of Dr. Francis H. Fay, associate professor of marine science at the University of Alaska at Fairbanks.

Fay is now the world's foremost authority on walruses. He has studied the patterns of wear on the tusks, whiskers and teeth. He has also investigated the musculature and innervation of the animal's broad snout. The only feeding posture consistent with his findings has the walrus foraging along the sea floor with the upper side of its muzzle downmost and forwardmost, and the tusks dragging rather uselessly behind.

Not only were walruses supposed to dig clams with their tusks, they were said to crack them with their teeth, spitting out the shells and eating the soft parts. But it soon became obvious to Dr. Fay that their teeth were not used for this purpose.

The walrus as rooter: a marine pig

How, then, does the walrus separate shell from food? Fay's conclusion is that the walrus has developed a highly efficient "vacuum pump," with the oral cavity acting as a cylinder and tongue acting as a piston. This conclusion would come as no surprise to zoo keepers who have found paint sucked off the walls of walrus tanks, a five-pound drain plug sucked from the bottom, and herring skeletons so neatly sucked free of flesh that they could serve as anatomical models. The walrus may be seen not as a digging animal, but as a rooter—a sort of marine pig.

The tusks have other functions: practically, they serve as weapons and tools, and symbolically, they serve as insignia of rank. They are employed, for example, in chopping out and maintaining breathing holes in the ice, and in self-defense. They are also used as hangers—the walrus rests in the water with his tusks hooked over the edge of the ice.

The walrus' only known natural predators are the killer whale and the polar bear. The tusks are not important in defense against the whale because it kills by ramming and crushing the walrus' thoracic cavity, but the polar bear can be deterred or even

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Walruses form small feeding groups in which they leave island to forage on continental shelf in Bering Sea. They do not use their tusks to dig for food, but root in the mud like pigs for clams and other prey.

scared off by a show of tusks. Neither polar bears nor killer whales are thought to extract a very heavy toll, so if the walrus can survive the high-powered rifles and steel-jacketed bullets of his chief predator—as a good pair of tusks brings about $1,000, some illegal hunting is inevitable—he has a good chance of living out his allotted years, as many as 40.

At Round Island one is immediately struck by the extraordinary gregariousness of the bulls. When the population dwindles, those left simply huddle closer together to fill in the spaces. And when the group gets below a certain critical mass, those remaining tend to move to the favored haul-out ground on the northwest point where a few hundred animals will pack themselves in about as tightly as a few thousand did several days before. The essence of walrusness, it seems, is being as close as possible to one's fellows; indeed, no other large mammal is quite so sociable.

Just what selective advantages this extreme gregariousness provides is a matter of speculation. Fay suspects it has to do with conservation of body heat useful to a species extending its range from temperate to arctic surroundings.

Together with the walrus' extraordinary gregariousness runs a strong current of intraspecific hostility, of what looks to lay eyes like sheer cantankerousness. Hauled-out walruses are constantly jabbing each other with their tusks. Fresh and dried blood is visible on many animals, especially around the necks and at the base of the tusks. Jabbings are not done with the full force available, however, which is capable of penetrating deep beneath the skin, nor are they repeated more than a few times. Indeed, they often assume the most casual and gratuitous character: a walrus will wake up among a group of sound sleepers, yawn, blink his brown, bloodshot eyes, raise himself slowly on his foreflippers and deliver a quick jab to his neighbor's back; then he will flop down to sleep against the side of his victim, who grunted once or twice but otherwise hardly reacted to the jab.

There is, however, some usually detectable pattern in this: the tusks seem to reinforce a loose sort of hierarchy dominated by the older males who are most successful in the competition for space.

Even as recently as 1952 when Fay began his walrus studies, it appeared to him that the species might be slipping off toward extinction. Since the late 1950s the population has responded dramatically to strict harvest limitations imposed by both the United States and the Soviet Union. On Round Island it has grown from 3,000 animals in 1959 to at least 15,000 today; the major Russian hauling grounds, three beaches on the Siberian coast and one on Big Diomede Island in the Bering Strait, are again crowded. Fay believes that the population of the Pacific walrus is now actually above prehistoric levels and is in the process of adjusting itself downward to a point of stability. He suspects that the Russians will soon begin commercial walrus-hunting operations, mainly for feed on fur farms.

During fall, the walruses depart seaward for their eventual rendezvous with the females along the edges of the pack ice, leaving Round Island to the foxes and the fierce winter gales. And then, in May usually, they return, and their bellows rise to mingle once again with the shrill cries of the kittiwakes.

Doleful individual is younger than most on the island as indicated by his smoother skin and short tusks.

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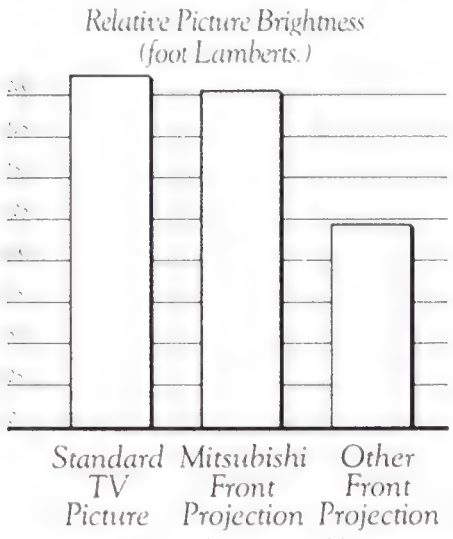

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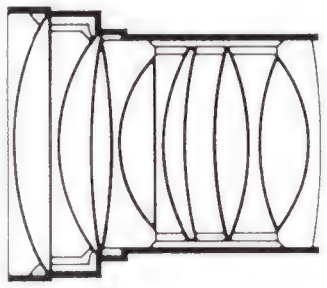

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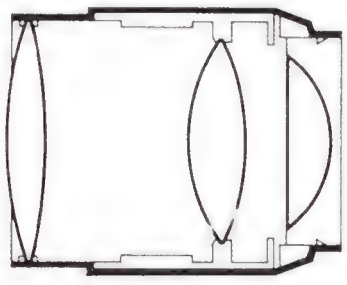

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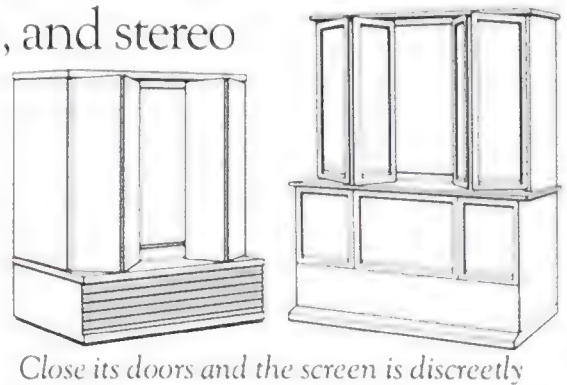

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By Philip Trupp

Ancient shipwrecks yield both prizes and bitter conflict

In pursuit of undersea riches, an armada of treasure hunters infuriates scholars who want wrecks preserved for history's sake

Archaeologists working near Miami on British ship HMS *Fowey* slide cutlass into a lifting container.

The wind was freshening and thunderheads lifted over the horizon when I accompanied a crew of underwater archaeologists last June on a special mission into the past. We were churning through the choppy waters of Biscayne National Park, just south of Miami. Twelve miles out and 30 feet down was a window on history, the remains of the 18th-century British warship HMS *Fowey*. While our Park Service dive boat plowed toward that historic wreck, I watched a black waterspout forming in the Gulf Stream. It may have been on just such a day in 1848, I reflected, that the *Fowey*, heavily armed and carrying a contingent of captured Spanish seamen, struck a reef.

The impact of that collision opened the ship's hull and for a long time the *Fowey* hung there, unable to move, until wind and tides lifted her off and carried her to a place five miles north called Legare Anchorage. Captain Francis William Drake knew his ship was dying and ordered her stripped and scuttled. She sank to the bottom and eventually disappeared beneath the sand. There, the *Fowey* lay entombed and all but forgotten until October 4, 1979, when she became the object of a court battle between a spear fisherman named Gerald Klein, who thought he had discovered her, and the National Park Service, on whose submerged lands she lay. Shortly thereafter, a preliminary U.S. District Court injunction was issued to prevent Klein from disturbing the wreck. The Park Service's archaeologists were delighted, because to them careless sport divers and greedy treasure hunters are pirates who loot wrecks for personal gain. Klein, on the other hand, was disappointed. He viewed the court ruling as grossly unfair, an abridgment of freedom and a slap in the face to anyone who longs to search for dreams at the bottom of the sea.

Using small sand blower, commercial diver takes gold ingots from Spanish galleon lying off Florida coast.

The debate is not limited to the remains of the *Fowey*. There are thousands of other shipwrecks in American waters. Dozens of marine archaeologists and thousands of treasure hunters want to get at them in different ways and for different reasons. Money is at stake, of course, but so, even more important, is history. Sunken vessels are archaeological time capsules. On land, antiquities are subjected to, and often destroyed by, the ravages of wind, rain and erosion. Many a ship on the bottom of the sea, however, is like a mammoth preserved in glacial ice complete with skin, hair, tusks and even food in its gullet. Properly exhumed, a shipwreck can tell us a great deal about what life was really like a long time ago.

George R. Fischer (p. 84), research archaeologist with the Park Service's Southeast Archaeological Center in Tallahassee, is in charge of excavating and documenting the *Fowey*. At 46, he is a solid, sometimes stolid-looking academic with a decidedly acerbic wit and an ailing back. Outwardly he appears imperturb-

Treasure hunter Mel Fisher emerges from cloud made by controversial "mailbox" used to blast away sand.

Gold from Spanish Main: gleaming bars, coins, chains recovered by Fisher's men from *Santa Margarita*.

able, but mention treasure hunters and he explodes with a string of epithets. Mention underwater archaeology in general, though, or the *Fowey* in particular, and Fischer grows positively enthusiastic.

Floating above the site in the gin-clear water, I found myself extraordinarily touched by the scene. After 235 years on the bottom, the *Fowey* looks nothing like a ship. For more than two centuries her timbers have made meals for worms, and the few objects that remain on the bottom resemble a deceptive pattern of shapes and shadows in the sand. It took a while before they made sense to me: the object that appeared to be a large stone half-buried in the sand was a cannon; a conglomerate that at first appeared to be a lump of broken coral finally emerged as a collection of tiles from the galley. That straight object encrusted with sea growth was actually a cutlass—still in its scabbard. Long dark shapes, on closer inspection, turned out to be fragments of the ship's timbers. And, most amazing, another sword, encrusted with coral, was thrust upright in the sand, as if a lost seaman had cast a final oath, then plunged his weapon through the silent sea.

Reconstructing history with bottles, buttons

A grid of yellow lines had been laced back and forth across the exposed portion of the vessel, and tied off into square sections, marked with numbered floats. Inside the sections, archaeologists were gently fanning away the sand with their hands, finding ceramic shards, buttons, broken green wine bottles and a small encrusted object—possibly a knife. They sealed their finds in plastic bags marked with the number of the grid section where they had been recovered. Back in the dry-land laboratory, the finds would be correlated with the grid sections and studied in relation to one another. Gradually, as the archaeologists continue methodically to dig deeper and deeper, the life of the vessel will take shape.

It will be a long time before the artifacts are displayed for the public to see, and George Fischer, for one, is in no hurry. When his crew finish the present stage of work, the *Fowey* will be covered with sand to stabilize her and make her less tempting to treasure hunters. "It may be years before we're through," Fischer explains. "Until then, the safest place for her is right where she is now—on the bottom."

Treasure hunters do not agree. They argue that many historic wrecks—those more than a century old—lie in shallow water where storms and wave action can destroy and scatter their remains. If we wait for the scholars and scientists to get around to those that are left, the treasure hunters say, most of the wrecks will be lost. There are archaeologists who say that's nonsense. "If shallow water is not good for wrecks," scoffs one,

"there wouldn't be so many wrecks still in shallow water." Shipwrecks are as safe in the sea, says another, "as pickles in a barrel."

Serious treasure hunters tend to be flamboyant and entrepreneurial by nature. Using their savings or investor capital and sometimes taking real risks, they often search for years before hitting pay dirt—if, indeed, they ever do. To hear them tell it, almost as soon as a treasure hunter finds a wreck and applies for a salvage permit, the archaeologists appear to block the permit, waving sheaves of court orders. But although some treasure hunters portray archaeologists as claim-jumping vultures, some archaeologists say it is actually the treasure hunters who drag each other into court. "In Florida, it's like a wild frontier," says Barto Arnold, an archaeologist for the state of Texas. "There actually have been gun battles between treasure hunters over sites."

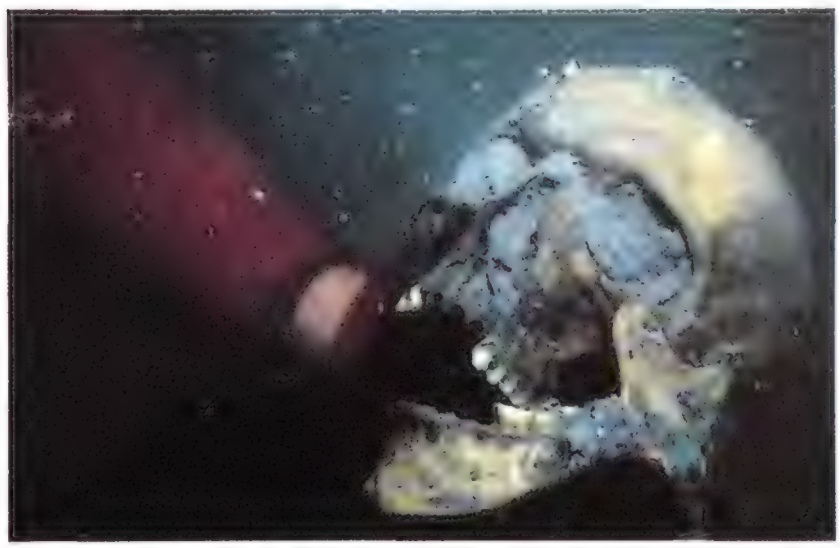
"Thou shalt not sell the goodies!"

If an undisciplined treasure hunter were allowed to work a wreck like the *Fowey*, Fischer warns, it could only end in disaster. Huge holes would be blasted in the sand by large formidable-looking tubes called "mailboxes." These devices direct the wash from a boat's propellers toward the bottom, and in 30 minutes can cut through about five feet of sand. The *Fowey*'s timbers would be scattered, artifacts would be collected without any particular relationship to each other or where they lay in the hull, so that the characteristics of the vessel would be jumbled and incomprehensible. The swords would be sold, the cannons left to rust in obscure marinas, and the non-negotiables swept aside in search of the mother lode. No marine archaeologist can endorse such methods. "Remember," says George Fischer, "the first commandment is: *Thou shalt not sell the goodies!*"

For centuries Europeans dived for treasure (and sold the "goodies" freely) but their swimmers had no face masks or goggles or a reliable source of air. Those handicaps severely hampered their effectiveness. The breakthrough that gave birth to modern underwater archaeology and large-scale treasure diving was the invention of Self-Contained Underwater Breathing Apparatus (SCUBA) by Emil Gagnan, a French inventor, and Jacques Cousteau. Introduced in the United States in the early 1950s, SCUBA made it possible to explore the sea with relative ease and safety. Thereafter, the dream of finding sunken treasure came true with a rush.

One of the first big-time treasure hunters, Kip Wagner, was a former Ohio building contractor who lived near Vero Beach, Florida. Walking along the shore, Wagner discovered a handful of Spanish silver *reals* in

Sophisticated video gear helped British archaeologists raise part of the Tudor warship *Mary Rose* last year.



Skull from *Mary Rose* was just one of discoveries that helped archaeologists understand vessel's history.

the sand. By 1959, he obtained a state salvage permit and was bringing up portions of the Spanish *flota* that sank off the east coast in 1715. In a few years, he and his associates recovered several hundred thousand dollars worth of silver and gold coins and formed a corporation known as Real "8," Co., Inc., after the Spanish name for the pieces of eight they had found.

At about that same time, serious historians were diving on wrecks, too, but the state of Florida was becoming increasingly alarmed about the destruction of sites by commercial interests. In the mid-'60s it passed some tough salvage laws and set up a special agency to enforce them. That, as much as anything else, lit the fuse of today's treasure wars.

The most famous treasure hunter of them all, Melvin A. Fisher (p. 84), president of Treasure Salvors, Inc., in Key West, has very definite views on the recovery of artifacts. "It's really simple," he says. "It takes money to do the kind of work we do. So we have investors, and we operate under free enterprise."

It was investor capital, millions of dollars pumped in over two decades, that led Fisher to the discovery in 1971 of one of the richest Spanish treasure wrecks of all time, the 1622 escort fleet galleon, *Nuestra Señora de Atocha*. The *Atocha* and her sister ship, *Santa Margarita*, identified a few years later, produced a dazzling treasure trove: thousands of silver and gold coins, silver bars weighing more than 70 pounds, gold bullion, an emerald cross, golden chains, assorted jewelry and a rich assortment of nonprecious objects. Altogether, the wrecks have produced more than $20 million worth of artifacts, but this may be only a fraction of the total; the rest still lies under 20 feet of sand in the Marquesas Keys, nearly 40 miles from Key West.

It is hard sometimes for Fisher to say whether his discoveries were a blessing or a curse. He has been the subject of admiring books and TV specials; he has even been honored by Queen Sophia of Spain. But this 61-year-old former chicken farmer from Indiana says he is not a wealthy man (his investors have claimed a substantial share of his finds) and he has endured much criticism. Archaeologists call his salvage techniques "piratical" and "destructive." There have been tragic personal losses, as well. In 1975, Fisher's son, Dirk, daughter-in-law, Angel, and diver Rick Gage were drowned at the *Atocha* site when their tugboat sank.

The same year, Fisher's career became bizarrely complicated. In an action unrelated to the *Atocha* operation, the U.S. Supreme Court clarified Florida's seaward boundaries. That change put the *Atocha* and the *Santa Margarita*, lying far offshore in the treacherous quicksands of the Gulf of Mexico, under federal jurisdiction on the Outer Continental Shelf (OCS). As a result, the state salvage permit originally issued to Fisher suddenly became void. Initially this was cause for celebration at Treasure Salvors' headquarters, because Florida now could no longer claim the 25-percent share of the finds that state law requires. But then the Department of the Interior moved to exercise its own control over the situation. When Fisher filed claim in admiralty court to the *Atocha*—the customary procedure whenever a wreck is found in federal waters—Interior intervened and claimed title to the ship. Fisher was allowed to continue his work and to keep possession of his *Atocha* artifacts but, technically, they were placed under the custodianship of the admiralty court and he could not sell them.

Thus began a series of court battles which rocketed Fisher into the public eye as a kind of American folk hero. He became, to some at least, the "little guy"

Florida archaeologist Sonny Cockrell (striped shirt), state agents checked artifacts on Mel Fisher's boat.

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George Fischer, Park Service: "Don't sell the goodies."

Archaeologist George Bass in Turkey: "Reconstructing history."

Entrepreneur Fisher astride bronze cannons: "Free enterprise."

whose hard-gotten gains were threatened by a vast and avaricious bureaucracy. In the end, Fisher won when the U.S. Supreme Court upheld the decision of the late Judge William O. Mehrtens, of the U.S. District Court for the Southern District of Florida. Mehrtens ruled on August 21, 1978: "The finding of a great treasure from the days of the Spanish Main is not the cherished dream of only the United States and Florida citizens; countless people from other lands have shared such thoughts. It would amaze and surprise most citizens of this country, when their dream, at the greatest of costs, was realized, that [government] agents . . . would, on the most flimsy grounds, lay claim to the treasure."

Surprised by the Mehrtens decision, the U.S. Department of the Interior appealed, but the appeals court upheld the earlier ruling. If Interior wished to assert its authority over historic properties on the OCS, new legislation had to be passed by the Congress.

Almost as if on cue, Congressman Charles E. Bennett (D., Florida) introduced a bill in 1979 proposing federal ownership and control of all sunken vessels and artifacts on the OCS and in state waters. As a founder of the Fort Caroline National Memorial Museum in Jacksonville and a writer of eight history books, Bennett was inclined toward preservation and the cautious, painstaking methods of the scholars. Anyone wanting to excavate a wreck would be bound by archaeological guidelines to be drawn up by the Interior Department. Bennett's motive was clear and simple: "I don't care about gold or treasure or the money end of it. It's the history I'm after."

His bill failed to pass in 1979 but, undaunted, Bennett has reintroduced different versions in every Congress since then. The latest is H.R. 69, which has gained some favor among the tiny community of marine archaeologists—there are only about 50 full-time professionals in the country—who are clamoring for effective legislation to end the wasteful looting of sunken vessels for amusement or profit.

No one is more passionate about this than former Florida state underwater archaeologist Wilburn A. "Sonny" Cockrell (p. 82). To some of his peers he is known as a "purist" and a man obsessed. Cockrell has a few genuine horror stories to tell. He says he has seen galleons disappear almost overnight, and years of frustration in a losing battle against treasure hunters have embittered him.

The incident that initially fired his passion was the destruction, during a few weeks in the early 1970s, of an 18th-century Spanish galleon by treasure hunters and sport divers. The vessel, thought to be the *San Jose*, was down in shallow water off the Florida Keys near Islamorada. "The *San Jose* was beautiful," he recalls. "It could have been an underwater park. I can

Philip Trupp, Washington columnist for Oceans *magazine, is an aquanaut certified by the National Oceanographic and Atmospheric Administration.*

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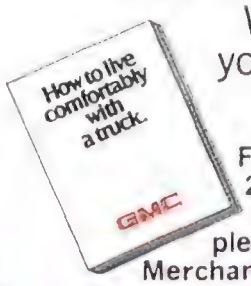

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show you pictures of my son swimming through the eye of a huge anchor, and there were cannons and actual ribbing. It was incredible—before they raped it."

On behalf of the state of Florida, Cockrell waged a long campaign against treasure hunters that resulted in costly litigation, much of it against Mel Fisher. At last count, Florida had spent $350,000 in legal fees trying to recoup its alleged share of Fisher's finds, and had nothing to show for it. The *Miami Herald*, in a recent editorial headlined "Burying Treasure," observed impatiently that the state was "paying a high price for a case of improbable merit." That kind of press coverage, in Cockrell's view, is at least partly responsible for continuing public indifference toward the need to protect historic wrecks. "People see shipwrecks as something to be *mined*," he complains, adding: "This myth that treasure hunters are real archaeologists is nothing short of immoral."

George Bass (p. 84), founder of the Institute of Nautical Archaeology and a professor of anthropology, *is* a real archaeologist. He was trained in classical archaeology before he learned to dive. Over the years, Bass (SMITHSONIAN, February 1978) and his colleagues have excavated dozens of shipwrecks around the world, salvaging all sorts of artifacts—not to sell but to study. His finds have helped fill in major gaps about the history of shipbuilding and commerce in the Middle East and elsewhere. In 1977, for example, one of his teams excavated a 900-year-old wreck in the Aegean Sea, near Marmaris, Turkey, recovering a huge collection of exquisite glassware, Greek coins, anchors, cooking ware, bronze buckets, Greek amphorae containing seeds, almonds and lentils, and even a plate with chicken bones. The project provided researchers with invaluable information about 11th-century trade which, had the artifacts been dragged up and sold, would likely have been lost. "Archaeologists don't just recover things," Bass says. "That's mere salvage. The real job is in the scientific reconstruction of history."

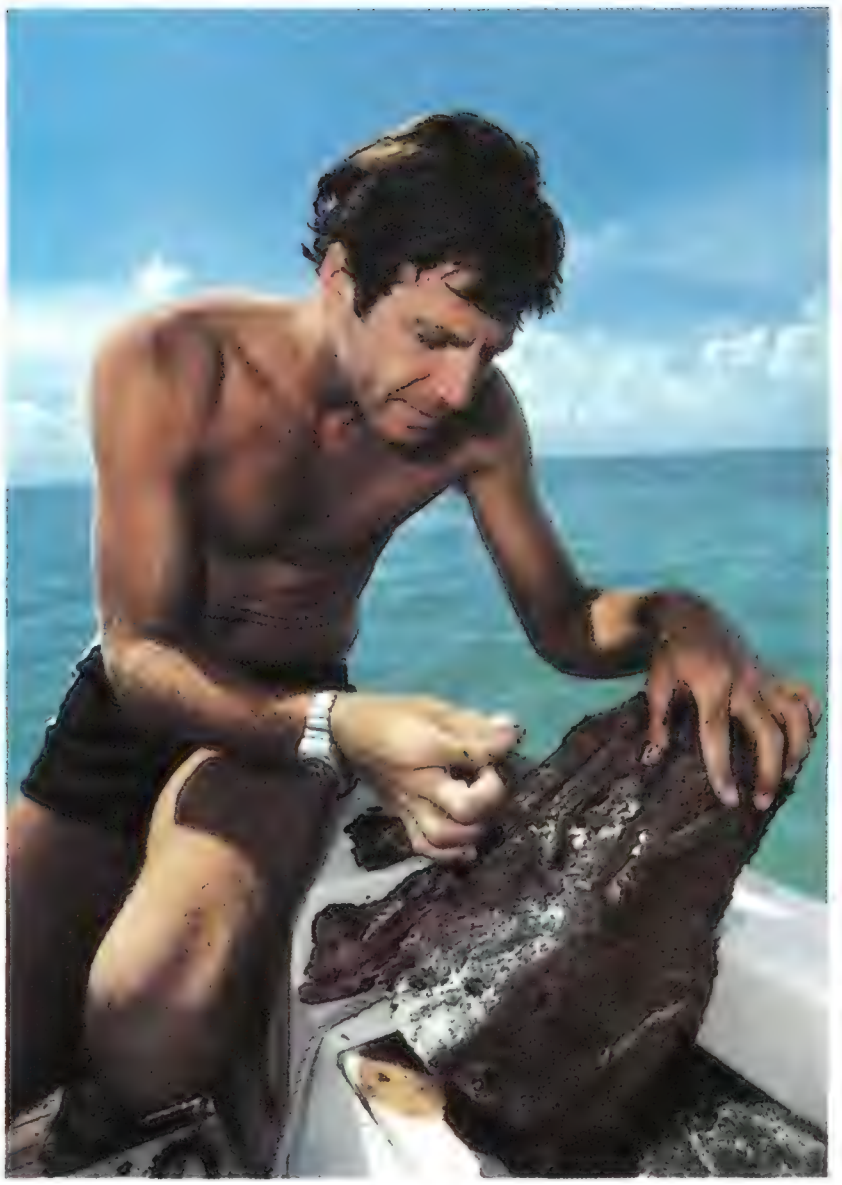
Another dramatic example of historical reconstruction is England's recently recovered *Mary Rose*, flagship of King Henry VIII, which sank off Portsmouth in 1545. The 415-man vessel incorporated some dramatic innovations in ship design and gunnery, but even more intriguing are its many clues to how crew members lived. The men took on board various items for their own entertainment. The remains of a musical pipe and some fiddles have been recovered, along with gaming boards for backgammon and chess. Food remains show that officers dined well on mutton, pork and fresh vegetables served on pewter plates, whereas the crew ate stewed meat from wooden trenchers and bowls. The skeleton of a professional archer, together with 2,500 recovered arrows and 139 longbows—some so well preserved that they can still be used—attest to the previously unknown fact that Henry's celebrated Tudor bowmen fought at sea in the 1500s.

From a scholarly point of view—indeed, Bass emphasizes, from the *public's* point of view—it is impossible to put a price tag on such evidence. That, Bass says, is why "it is just plain wrong to sell artifacts." But treasure hunters don't see it that way. Salvage is a costly business and investors require some return on their investments. Even the law-abiding and history-

Divers from Treasure Salvors, Inc., Fisher's firm, pick up a dagger at lucrative wreck of *Santa Margarita*.

Archaeologist Duncan Mathewson, surveying grave of Spanish ship, keeps careful records of Fisher's finds.

Historical treasure, the anchor of Civil War ironclad *Monitor,* was raised by archaeologists in August.



University of Miami student inspects charred wood of Biscayne Bay wreck. Ship may have gone down afire.

conscious British are willing to make some trade-offs. At present, they are selling slivers of timber from the *Mary Rose*, using the funds to finance further work.

That arrangement does not bother most preservationists because the slivers being sold are not of any value archaeologically. But some divers and archaeologists are willing to consider more provocative compromises, as long as they enable the work to go on. Robert Marx, 47, is a pioneer in the archaeological diving field who believes the true name of the game is "dig we must." All the marine archaeologists in the world, Marx claims, cannot make a dent in the job that needs to be done, and those who cling to the concept of total control may be cheating themselves and the public. Marx helped write Jamaica's antiquity law which gives the government 75 percent of its submerged patrimony. He is often employed by foreign governments that fund his work through the sale of duplicate artifacts and materials considered nonessential to an overall study. The policy, Marx says, is a mix of common sense and simple economics.

Many scholars assert that treasure hunters undercut the feasibility of compromise by the reckless way they conduct their underwater digs. Marx points out, however, that some excavating techniques once totally unacceptable in scholarly circles are now practiced by the very people who once condemned them. A few years ago, for example, no self-respecting academic would have dreamed of using *plastique*, but treasure hunters used it. These days, the explosive is employed in special situations by archaeologists, as well.

Marx and others who occupy a middle ground in the controversy over shipwrecks believe that some treasure hunters, at least, have not been given enough credit for the good archaeological work that they do. Mel Fisher employs a marine archaeologist, R. Duncan Mathewson III (opposite), who studied at the University of London and served as director of excavations for the Institute of Jamaica. Mathewson dislikes selling artifacts and has had a running battle with Fisher on the subject. Although it is a battle that he loses, Mathewson does document, photograph, draw and weigh each artifact Fisher salvages. He has managed to document, for the first time, how a ship breaks up in

shallow waters. He has also, he complains, paid a heavy price for his ten-year association with a treasure hunter: some of his professional papers are not reviewed by his peers, he is often invited to stay away from meetings and he has even been pressured to resign his membership in academic societies.

In an educational sense, however, some progress is being made. Mel Fisher runs a preservation laboratory and a museum in Key West; next year, he will put a touring show on the road so that people can see his spectacular finds. As a result of his work on the *Fowey*, George Fischer of the Park Service will make public new information on the nation's history. The Park Service has also created an underwater "trail" at Isle Royale in Lake Superior, where divers may now descend through 70 feet of chilly water to the wreck of the *Monarch*, an 1890 passenger/packet vessel, with a plastic map that tells underwater visitors exactly what they are looking at. Nearby, divers may also visit the intermingled remains of two other ships in the unusual park: the *Cumberland*, a graceful wooden sidewheeler that foundered on a reef and sank in 1877, and the *Henry Chisholm*, which suffered the same fate 21 years later.

One thing the public still has not been educated about is the popular but erroneous notion that vast fortunes may be gleaned from sunken treasures. Although many investors are attracted by lucrative tax write-off possibilities, profits per se are hard to come by. Few if any treasures, in fact, have produced significant revenues after costs. Yet even so, sport divers and treasure hunters continue to exploit wrecks and, as a result, historical evidence continues to disappear.

Recently, for example, marine photographer Robert Holland visited the wreck of the Spanish merchant ship *San Anton do Brazil* in the Bahamas, where he took the picture on the cover of this issue. At that time, three corroded anchors were visible on the ocean floor. Later, Robert Marx, who originally found the wreck, discovered that the site had been robbed. Holland subsequently found one anchor that looked just like those he had photographed. It was hanging above the bar in a Miami restaurant.

Back in Washington, Congressman Bennett has once again introduced protective legislation. He is also supporting another bill, the Historic Shipwreck Preservation Act, that would allow states to own historic shipwrecks; this, in turn, would enable them to run their own preservation and study programs. The new bill is generally favored by scholars because it opens the way to providing a genuinely archaeological framework within which limited salvage permits may be granted.

There have been some seemingly encouraging developments in Florida, too. Officials there, under court orders, have finally taken steps to end the treasure wars, dropping legal actions against Treasure Salvors, Inc., and working out an agreement in which all parties presumably will act in the public interest. According to Secretary of State George Firestone, the Fisher group will be allowed to work 12 wreck sites under guidelines drawn up by a five-member committee appointed jointly by Treasure Salvors and the state.

Firestone is an optimist. For the future, he sees a mix of federal, state and private funding for marine archaeology and he envisions hobbyists, professional archaeologists and treasure hunters working together. Some academics who are familiar with the Florida situation do not share Firestone's rosy view of the future. They talk about bribery and back-door political influence-peddling by treasure hunters and their big-money investors. And there are open expressions of contempt by archaeologists for the notion of cooperating with their longtime adversaries. "Why in hell should I work with a guy like Mel Fisher?" sputters one indignant scholar.

Meanwhile, the fate of shipwrecks hangs in the balance. As this story went to press, George Fischer phoned from Florida. He reported that in the last days of the *Fowey* dig someone stole in at night and jumped the site. They dragged an anchor over the grid, blew a large crater in the sand, hacked away the protective layers of coral growth from a barrel hoop and left it broken on the bottom. I remembered the delicate grid, the artifacts quietly in their places, the true peace of the ocean and the ship's place in it. I did not want to imagine how it looked now.

At shipwreck site in Turkey, archaeologists in an air-filled dome can compare notes, talk with surface.

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By Dora Jane Hamblin

The luthier's art reigns once more in old Cremona

While it may not have produced, yet, another Amati or Guarneri or Stradivari, there is now a brisk resurgence of their honorable craft

To Italian cognoscenti, Cremona in Lombardy is the city of *turon, turass, tetass,* meaning in dialect, respectively, *torrone* or almond nougat, *torrazzo* or bell tower and, in delicate translation, teats.

Discreet inquiry reveals that the teats involved belong to the cows which have for centuries provided butter and sustenance for the men who made the nougat and built Italy's tallest (364 feet) bell tower. All have flourished during the 2,200 years since the Romans established a base on the bank of the Po River, the muscular Mississippi of Italy, but despite their ancient aristocracy all yield pride of place here to the esoteric art of violin making.

It was Cremona which produced the finest violin makers the world has ever known, from the 1500s into the 1700s: the Amati, the Guarneri, the Ruggeri, Carlo Bergonzi and the towering master, Antonio Stradivari. And it is Cremona again today, after a lapse of centuries, which produces some of the world's finest stringed instruments in an atmosphere which evokes the glory days. Tucked away up and down its twisting medieval streets are dozens of workshops where loving hands shave and shape wood, boil up varnish concocted from ingredients mentioned in ancient tracts, hang their embryonic instruments above the tiled rooftops like so many plucked chickens, to ripen in the sun and air of the Po Valley. This air, Lombards say, makes modest miracles: hams come to sweet maturity, rounds of beef achieve perfection and violins take on a tone unequaled elsewhere in the world.

Whether all these claims are true or not, Cremona is a little (80,000), very very old city where bicycles and market-bound matrons interfere with the automobile traffic and where the sounds and symbols of music are everywhere. Stradivari's memorial is prominent in the Piazza Roma, the church where he was buried having been demolished in 1869. Only a few hundred yards away in the Piazza Cavour is a rather odd statue of Claudio Monteverdi of Cremona, often credited as

Violins and future violins—the blocks of wood—
are seasoned in quintessential Po Valley air above
the venerable red-tiled roofs of ancient Cremona,
watched over by one of Maestro Bissolotti's cats.

the first real master of opera with *Orfeo* in 1607. A ten-minute walk or a two-minute bike pedal away is the Museo Stradivariano in a wing of the Palazzo Affaitati, where are displayed wooden master forms, bridges, "f" hole patterns and construction notes of the master and a permanent collection of fine instruments which have won prizes in Cremona stringed-instrument competitions. In the Matrimonial Room of the 13th-century city hall are one precious Stradivari (the 1715 instrument once called the Joachim for its most celebrated owner, the 19th-century violinist Joseph Joachim, and now renamed *Il Cremonese*), two Amatis, a Guarneri "del Gesù" and an ornate 20th-century production of the Italo-American master Simone Sacconi. Every morning including Sunday a silver-haired maestro named Andrea Mosconi (Cremona violin school, class of 1950), curator of the precious instruments, strides into the city hall and plays one or two of them

Photographs by David Lees

(p. 96) to keep them in form—mostly Bach, to a random audience of well-informed tourists or impressed schoolchildren.

Things were not always thus. After the lesser heirs of Stradivari and Amati died in the mid-1700s, *liuteria* (violin making, derived from *liuto*—lute—a predecessor of modern stringed instruments) languished.

Tentative rebirth was attempted often by native sons, but it was achieved finally only by the intervention of a singularly unpleasant Fascist named Roberto Farinacci. Even though Il Duce didn't like him, Farinacci made himself a power in Lombardy, and he was a devoted Cremonese. He used the 200th anniversary of Stradivari's death in 1937 to mount an international homage which drew 110 violin makers and some 350 instruments from all over the world. So inspired was he by the reaction—about 100,000 visitors—that he persuaded the regime to establish a school for stringed instruments in Cremona. The Scuola Internazionale di Liuteria "Antonio Stradivari" opened in 1938 in borrowed quarters in an industrial-arts high school. In its first year it attracted only three local boys who decided to switch from cabinet making to violin making.

Almost half a century later the dichotomy between simple woodworking and instrument making still exists. The school is now called the International Professional Institute of Violin Making and Woodworking, a part of the Italian state system and similar to a technical high school—a source of pain to non-Italian students who have been educated elsewhere but must sit through a required undergraduate curriculum.

Since 1942, when the first two Italians were granted their diplomas, the school has graduated 130 *maestri di liuteria*, more foreigners than natives. The first American graduate was Adolph Primavera in 1951, and true to the tradition of Cremona (there were five Amati, five Guarneri and three Stradivari) Adolph's son Alfred went back to graduate in 1975. The very first foreigner to graduate was a Hungarian named Peter Tatar who walked from Hungary to Cremona playing tunes on a homemade violin in inns and taverns along the way to support himself. Tatar was crushed to discover that in 1933 in the home town of Stradivari there was not only no violin-making school, but not even an atelier where he could study with a maestro. He made it back to Cremona when the school opened, and got his diploma in 1943. His fellow countrymen have had adventures of their own: Istvan Konya was imprisoned for trying to flee Hungary in 1950, finally got to Cremona and graduated in 1968. His son, who calls himself Stefano Conia, finished the

The author, whose Saudi Arabia article appeared last month, says the only instrument she ever mastered was a Camp Fire Girls' bugle back in Iowa.

Beneath the festoons of stringed instruments, Maestro Stefano Conia supervises his violin students.

School's incipient maestri came from 22 countries in 1983, will spend at least two years learning skills.

With three sons who are also maestri looking on, Francesco Bissolotti gently applies varnish to violin.

Thérèse Girard of Canada puts finishing touches on scroll of violin in Maestra Wanna Zambelli's class.

course four years later and has settled in Cremona as a maestro both at the school and in his own workshop. There are presently four Bissolotti maestri at work in the same studio—father Francesco, who won his diploma in 1961, and three of his five children (below).

The school turns away three or four prospective students (mostly young Italian woodworking candidates) for every one accepted, tries to limit total enrollment to 100. Violin students seldom drop out, so by the third and fourth years half the class roster is foreign. Americans, French, Japanese predominate, but in 1983, 22 nationalities were represented.

An angel from Switzerland

For years the school limped along on the magic name of Cremona alone, but then in 1969 a Swiss industrialist named Walter Stauffer entered as angel. He bought a 15th-century palazzo in Cremona and hired architect Sergio Renzi, the present director of the school, to help him convert it into a multipurpose palace of the musical arts. Proceeds from Stauffer's estate have engendered a building-buying-equipping wave with exotic acoustical instruments, spacious laboratories, a full staff and seed money to help buy back from collectors some of the historic instruments which Maestro Mosconi plays in the city hall.

Despite all this, the school offers about 18 hours a week of teacher-supervised laboratory time. That's enough to teach a boy to build a bookcase, but it won't do for a violin, a viola or a cello. Thus, perhaps in happy recompense, today's fledgling luthiers volunteer their time and their hands to maestri like Conia (left). They live in a strange, dreamlike *Bohème* sort of world, usually short of cash, always ready to share, half in love with Italy and more in love with their own self-images as practitioners of a profession combining art with artisanship, commercialism with vision.

Their way of life is challenged and fragmented today by the pressures of the marketplace. A violin, a viola, a cello made by a professional should fetch between $3,000 and $10,000 on the market, but each instrument can take a year, or two years, to bring to perfection. In Cremona there are two competing schools of thought. On the one hand are classicists who protect and defend the historic method of the "inner form," a pattern created by one of the giants, around which the maker shapes the ribs, the top and bottom. Maestro Bissolotti and the Cremona school's first Italian female graduate, Wanna Zambelli, class of 1972, spearhead the movement with the fervor of religion. Some other maestri in Cremona prefer a system loosely called "French," in which the form or pattern is external—the instrument is built inside a form rather than being formed outside it.

To "keep it alive," Maestro Andrea Mosconi plays antique instrument in city hall's *sala dei violini.*

There are many experts, including Cremona's only professionally trained restorer, the United States' Bruce Carlson, a Michigander and Cremona's class of 1978, who maintains with logic, "The method is less important than the product. A fine violin maker can produce a fine violin with more than one method." But only, everyone agrees, if he is willing to sacrifice quick money for art, and willing to "waste" hours of time in an amorphous search for the feel, sound and resonance which he may be able to coax from wood. And which might, just *might*, make him immortal.

"We hope to run a nursery here, a nursery from which might come another Stradivari," says a clear-eyed lawyer who works for the Stauffer Foundation. "But money alone, and will, don't create geniuses. We can create only the opportunity."

In the end it comes down to wood and dedication. Hands which communicate with wood. ACLAP, a Cremonese association of professional luthiers, has mounted an exhibition called "Classical Violinmaking: a Method," which has played to ecstatic audiences from Milan's La Scala to Genoa's celebration of Paganini to Paris, and which may eventually be seen in the United States. It explains and demonstrates with models and photographs the fine art of reducing a tree to a sound. Although spruce and maple are used primarily for violins, willow, poplar and beech may be used for some parts, and the selection of the perfect wood is crucial. And nowadays that perfect wood is hard to find. Sergio Renzi, director of the Cremona school, complains, "We used to buy complete trunks of ebony from Africa, but now they want to cut it themselves and send it to us already worked. I understand. They want work for their workmen. We buy wood from Yugoslavia, from Germany, from north Italy. And whenever possible we prefer to cut it ourselves."

Sniffing, lifting, feeling and stacking

Most of Cremona's serious makers sniff and lift and feel the wood, and they stack it carefully to mature for eight or ten years. The Cremona school stacks for eight, and will not permit students to use fine aged wood until they are in their third or fourth year of study. Some individual makers are even more strict. Ten years, they say, and they invest their futures in piles of neatly cut wood which they defend more vigorously than their wives. American Gregg Alf (p. 98), a 1980 graduate of the school, said ruefully, "I bought so much wood in Yugoslavia and Germany that I have been wood-poor ever since."

A violin-maker's studio is a nest of nice smells and very sharp blades. It requires a sturdy butcher's block of a table, sets of vises and forms for building instruments, cutting tools of all sizes and shapes. Saws, scrapers, gouges, files and planes range from big to fingernail size.

But explaining how to build a violin is a bit like trying to explain a circular staircase without using your hands. The mechanical process is there, and the technique, but the truth lies in the touch of the builder's hands and the long, slow, mute communication between wood fiber and flesh.

In the classical Cremonese style the luthier, working with infinite patience and precision, shapes various components—ribs, back, "belly" and "f" holes as well as the bass bar, neck, sound post and bridge—mainly using forms based on patterns developed by Stradivari or Amati or Guarneri. Then there is the delicate matter of gluing and refining. One of the last processes is the exacting "purfling"— a thin, intricate inlay of fine contrasting woods that defines the elegant con-

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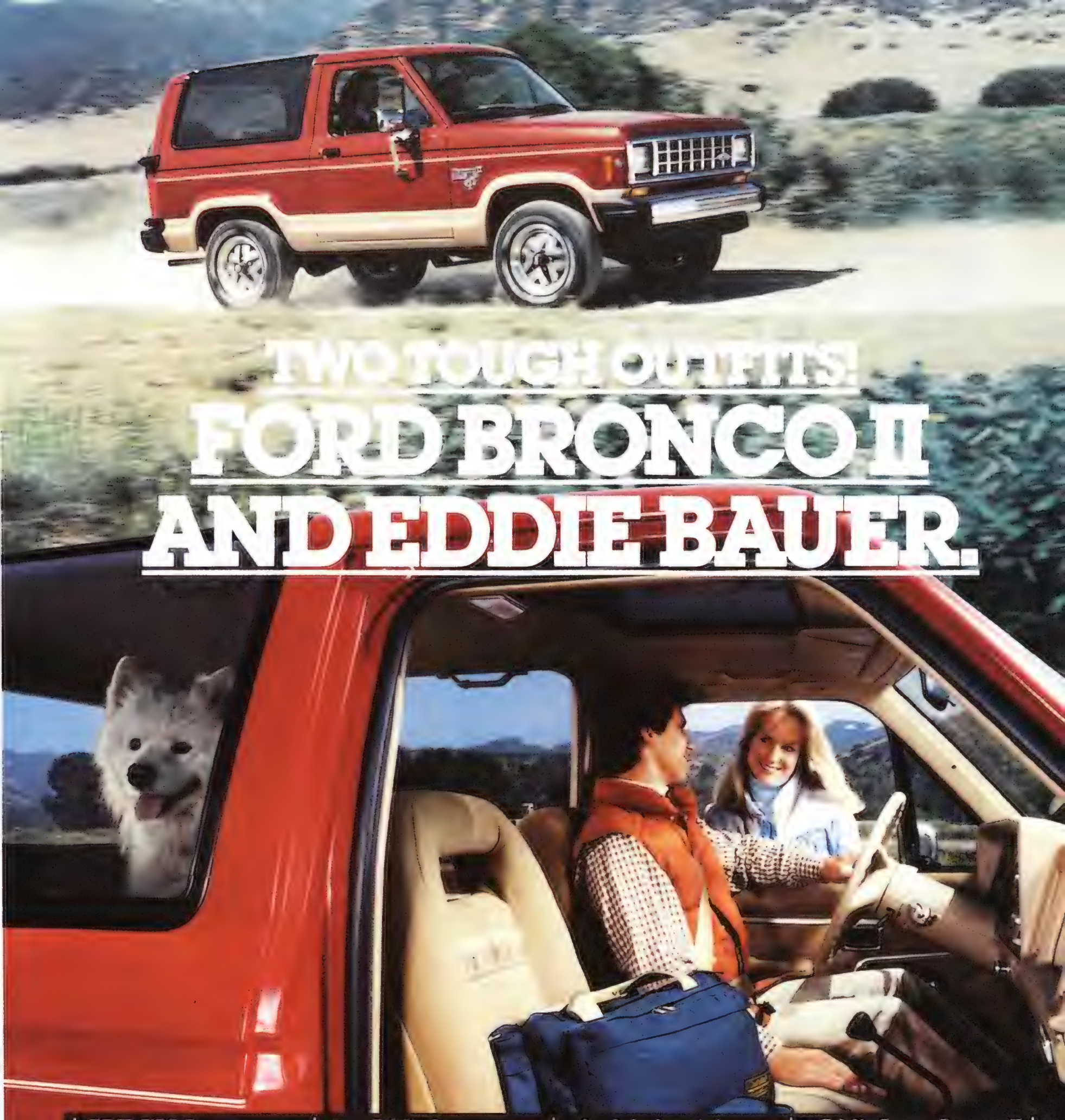
tour of both the front and back of the instrument.

At last the violin is completed "in the white." Makers consider this the halfway mark. Now comes painstaking brushwork to seal the wood, and layer after layer of varnish. And hours and hours of the plucked chicken's exposure to that magic Po Valley air. Each maker has his own recipe for varnish; each works with a mortar and pestle and exotic ingredients, bending over a hot stove to get it right. Almost all deny that there was a secret in the varnish of the old makers —and almost all try to find that secret.

It is the sort of work calculated to drive its devotees mad, and some admit it. Maestro Bissolotti gets on his bicycle about every three hours and rides around the city. Wanna Zambelli walks to the school and distracts herself by helping students. Bruce Carlson spends hours talking with people who own instruments they want restored: "When you're talking, your hands aren't going crazy." Gregg Alf waters his onion patch.

Today's master makers admit that they try, hard as they can, to copy old systems and adapt to new methods. They tend to think the only secret, if there is one, is love. Love of your work, love in your movements, love for your materials. If you invest love and time, it might come out all right. But one never knows for sure. Francesco Bissolotti, a dean of the modern masters, says it loud and clear: "Violins are like children: they come from the same parents, they resemble one another, yet each has its own character. The voice of a violin is like the soul, it is beyond physical control. It is a mysterious thing which is the result of a complex of factors no one can predict."

At a café opposite the *duomo*, Gregg Alf (playing violin) and his friends join afternoon aperitivo crowd. Square structure in the background (far left) is Cremona's 13th-century bell tower, highest in Italy.



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Bronco II

Eddie Bauer

Ford

Its abdomen as shiny as a ball bearing, a parasitic spider, *Argyrodes*, moves in the web of a golden silk spider, in background, to steal prey captured by latter. It is rarely attacked; no one has seen it caught.

Commando spiders live by derring-do

When they sense the right vibrations, these tropical parasites dash deep into the webs of hosts 80 times their weight to steal food

A man's home may be his castle, but a spider's web is always open to the community, and for some the spider's prey is a silken version of the covered-dish supper. Hummingbirds and warblers feed on the trapped insects, as do some scorpionflies, wasps and damselflies. Certain tiny flies even perch on the body of the host and share what it eats.

The unkindest cut of all, however, must be spiders that camp in another spider's web and live off the labors of their host. In these photographs such a kleptoparasite, a tiny spider of the genus *Argyrodes*, is living in the web of a golden silk spider, *Nephila clavipes*. It not only steals prey the host has killed and wrapped, but even feeds right under the mouth of the long-suffering host.

According to Fritz Vollrath at the Smithsonian Tropical Research Institute in Panama, the kleptoparasites take up stations outside the capture area of the large orb webs of their hosts. They attach fine signal threads to radii of the orb web and into the hub area, where the host stores captured prey. Vibrations set up as the host wraps its newly caught prey reach the parasite and it begins a raid.

The *Argyrodes* moves very slowly and carefully when the host *Nephila* is not moving, because then it may be detected itself. When the host is moving, the parasite moves more quickly. If the web vibrates violently, as if the host were lunging forward, the parasite simply drops out of the web on a dragline.

Once the *Argyrodes* finds the prey, it begins fixing threads to it that will be attached to a safe place outside the web. When all is ready, the raider cuts the threads of the web and escapes with the booty. Vollrath has reported *Argyrodes* females finding the prey within two seconds and completing the theft in another ten.

Not all *Nephila* webs are home to such parasites, but many contain two to five; and at times 40 to 45 *Argyrodes* may be using the web of a single host. This is not as crowded as it sounds: the host spider may weigh 800 milligrams; the parasite weighs only ten.

For a harassed *Nephila*, the best strategy can be to abandon its web and spin a new one elsewhere. There it can live in peace, until it senses the slight twitching of its web that means the *Argyrodes* have arrived.

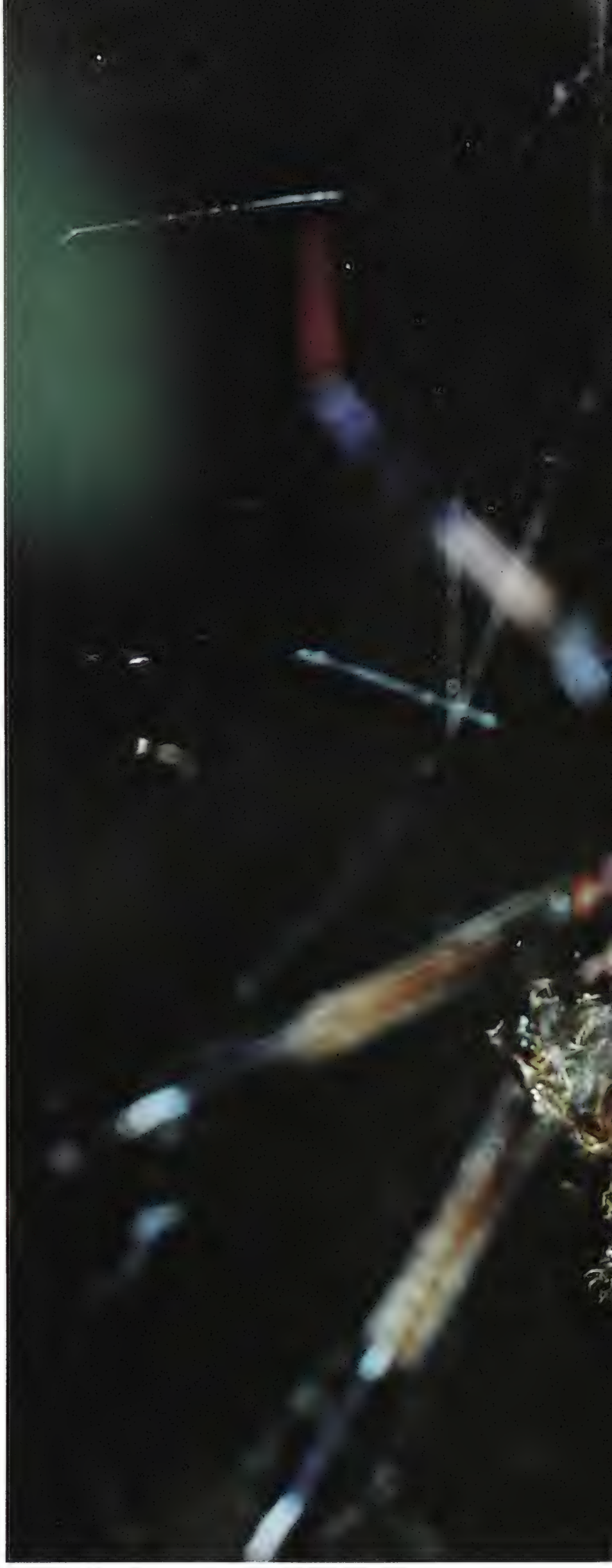
John P. Wiley jr.

Photographs by Robert Noonan

Seemingly unaware of the approaching parasite, the female golden silk spider, *Nephila clavipes*, continues to feed on a small insect. The much smaller spider above the female is a male of the same species.

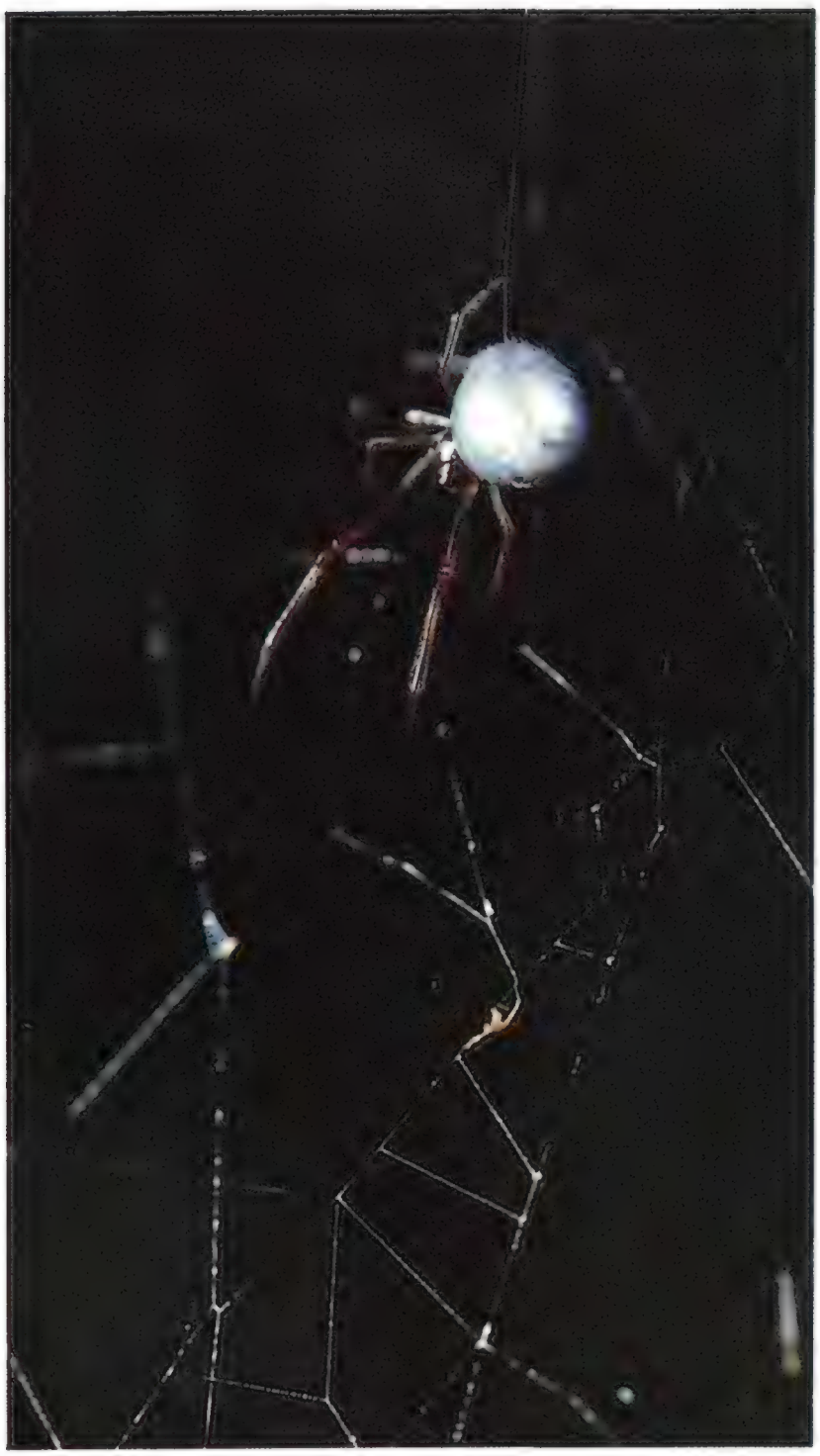
Daring raids of commando spiders

Approaching from bottom, an *Argyrodes* prepares to feed on an insect held by the much larger *Nephila.*



Here the parasite literally takes food from under the mouth of its host. They both have poor eyesight.

It is not clear that either sees the other. If threatened, the *Argyrodes* will drop out of web on its dragline.



Size of parasite can be seen by comparing it to the fine silk strands it is shown moving across.

Egg sacs of the parasite hang at the edge of golden silk spider's web, holding a new generation of thieves.

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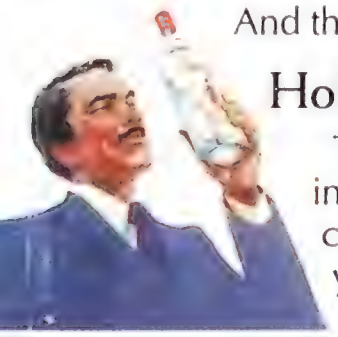

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In Mt. Everest region of eastern Nepal, Blum's party crosses the Tesi Lapcha Pass—at 19,000 feet the highest pass of the traverse. The descent from this pass required negotiating an almost vertical ice face.

By Arlene Blum

Two mountaineers hike the Himalayas from end to end

The leader of the American women's team that climbed Annapurna reports on an arduous 2,000-mile journey from Bhutan to Ladakh

Although the sun had not yet set, night had already come to the dense leech-filled forest in remote eastern Bhutan. I was attempting to make my way through the forest down a steep V-shaped trough of yellow mud filled with half a foot of water. On September 21, 1981, the second day of what would prove to be a nine-month up-and-down journey across the Himalayas, I was afraid I was lost.

Only yesterday morning my traveling companion, Hugh Swift, and I, with five Bhutanese accompanying us, had cheerfully marched out of Tashi Yang-tsi Dzong near the eastern border of Bhutan, the starting point for our "walk" along the length of the world's highest and most magnificent mountain range: the Great Himalayan Range. During the next nine months, Hugh and I—calling our venture the Great Himalayan Traverse (GHT)—hoped to cross the kingdom of Bhutan, part of the Indian state of Sikkim, the entire kingdom of Nepal and the Indian Himalaya. Our destination was Ladakh, a trans-Himalayan region in northern India. Although two other parties, one from New Zealand and another from India, were attempting similar walks at the same time, no one had ever completed such a trip and we didn't know whether we could do it either.

Earlier in the day we had crossed the Donga La (12,500 feet)—the first crossing of that pass by Westerners. On the descent I lingered too long in a meadow of luxuriant wild flowers, assuming my companions, who had gone on ahead, would camp soon.

Near end of traverse, trekkers cross a steep scree slope below Narak La, a pass in India's Zaskar region.

Peak 29 near Manaslu in central Nepal offers one of the spectacular vistas and seasonal contrasts of the trek.

But below the meadow the forest trail, washed away by recent monsoon rains and eroded by the hoofs of herds of cows, was almost impassable. As I felt my way down the slippery trail, I couldn't help wondering what I was doing here.

Ten years ago I'd spent six months climbing in Ethiopia, Uganda, Iran and Afghanistan. Now these countries are irreversibly changed and inaccessible to me. The Himalayan foothills are one of the last major inhabited areas untouched by modernization. For weeks at a time one can cross areas without roads, electricity or shops. But roads are being built and change is coming. I wanted to visit the Himalayan villages and spend time with these people before their traditional way of life was altered by outside influences. So did Hugh, a running friend from Berkeley, California, who had just finished writing *The Trekker's Guide to the Himalaya and Karakoram*. His knowledge of terrain and geography was essential for our venture.

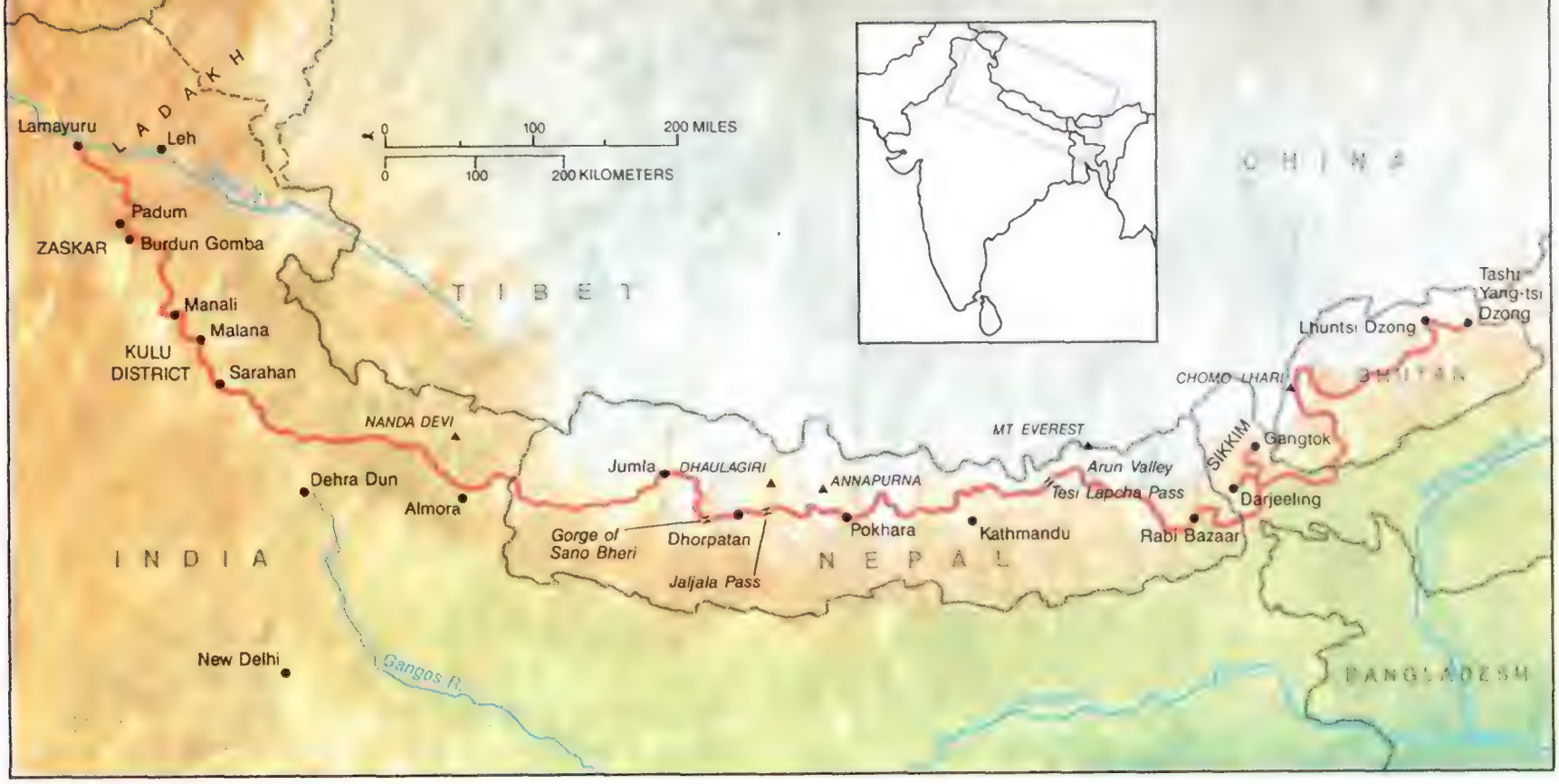
Still, we didn't know if we could do it. The Himalayan mountains extend more than 1,000 miles from east to west. Our devious switchbacking route would be close to twice that distance. We would have to piece together rarely used trails, continually descending into the mighty gorges of rivers that drain into the Ganges and Indus and climbing back up to high, desolate ridges.

Lost on the walk's second day

And here I was on only the second day, alone in the dark on the worst trail I'd ever encountered, beginning to fear I had somehow taken the wrong path. Finally, I heard the voice of our Bhutanese horseman, who had returned with a small flashlight to show me the way to the next village.

Our accommodations there, on the hard wooden floor of the village *gomba* (Buddhist temple), seemed almost luxurious. A bronze statue of Buddha gazed serenely above brightly burning butter lamps. Local villagers wandered in to say a few prayers, spin the prayer wheels and stare at us with polite curiosity. The village headman told us we were the first Westerners ever to visit his village.

Archery is the national sport in Bhutan, and a tournament (p. 110) was in progress the next day when we reached Lhuntsi Dzong. Two teams of archers were matched in pairs, each intent on hitting a target 150 yards away across a ravine. Each man lifted his five-foot bow, unloosed an arrow with a lunge and a great cry, and then ran after the arrow, yelling as if to urge it to the target. On the rare occasions when the target was hit, the archers would all dance about wildly, singing loudly and swigging *arrah*, the local fermented rice beverage. As the day progressed, the



Map shows route of the Great Himalayan Traverse, from start at Tashi Yang-tsi Dzong in eastern Bhutan through parts of Sikkim, Nepal and the Indian Himalaya to end point in Ladakh in northern India.

shooting became increasingly enthusiastic and increasingly wide of the mark.

Our route in Bhutan, as elsewhere, would climb up to a ridge or pass between 6,000 and 19,000 feet high and then plunge down to a river, usually between 1,000 and 4,000 feet. We had gone from fall weather at our starting point in Tashi Yang-tsi Dzong to winter on the high pass, then down the terrible mud-leech trail to find spring at the village *gomba* and summer while we were trudging along the river below. At the archery tournament we had returned to fall. This was typical. In any few days of our walk, we would encounter changes in vegetation from tropical jungle to bamboo forests to temperate woodlands to mountain fir forests to rock and snow above the timberline. Indeed, some pass crossings were like walking from Florida to Alaska and back again. In the morning, I often wore a sweater, down jacket, mittens and a furry hat; by midday, I'd be wearing a T-shirt and thin cotton pants; I would have to bundle up again in the evening.

The highest elevations we reached in Bhutan were as we approached Chomo Lhari, a 24,000-foot-high holy mountain on the northwest border between Bhutan and Tibet. We crossed a high valley inhabited by nomadic yak herders and herds of rare blue sheep known as bharal, and camped near a family that was looking after 300 large, hairy yaks. The nomad's way of life is totally dependent on the yak: inside an octagonal yak-wool tent, we sat on a bearskin in front of a smoky fire beneath drying hunks of yak cheese. A mother, nursing her eight-day-old baby, chewed hunks of yak butter, then fed them to the infant.

The yak-herder's son showed me his science book—in English—which told of men walking on the moon. Most young people in Bhutan are getting a chance to go to school, where they study English, science and traditional Buddhist subjects. This is in line with the wishes of the popularly revered late king, Jigme Dorji Wangchuck, whose goal was to slowly modernize the country while maintaining its cultural heritage. Wangchuck voluntarily gave up his absolute power, instituted land reforms, and started schools and hospitals across the country.

We arrived in Sikkim on October 21, 1981, in time to see another great Himalayan leader. The Dalai Lama, spiritual leader of Tibetan Buddhists, had returned to Gangtok, the capital of Sikkim, for the first time since 1958. Sikkimese from all over the country thronged to a polo field to hear him urge them to live so as to increase the happiness and decrease the suffering of all sentient beings.

As we crossed the eastern Indian-Nepalese border a few days later the roadside sign proclaimed, "Welcome to Nepal." We were at once caught up in one of the many festivals celebrated in this mountainous Hindu kingdom. This was the Day of the Dog, part of a Hindu holiday called Tihar. On this day, all the local dogs—even the mangiest street pariahs—were fed a good meal and decked out with a red *tika* mark on their foreheads and a garland of marigolds around their necks (p. 110). Some of the dogs looked rather uncomfortable in their unaccustomed finery.

The Day of the Dog was preceded by the Day of the

Arlene Blum has scaled peaks (including Everest and McKinley) in Asia, Africa, North and South America. She is the author of Annapurna, A Woman's Place.

At an archery meet in Bhutan, one team celebrates a "hit"; accuracy here is not as high as are spirits.

Nepalese woman swings at Tihar festival honoring various gods, animals and the family money box.

Garlanded dogs are treated royally on second day of Tihar; other days are devoted to crows, sacred cows.

Crow and followed by the Day of the Cow, the Day of the Family Money Box and the Day of the Brother, each being honored in turn. Outside many villages, temporarily constructed wood-and-bamboo Ferris wheels and 30-foot-high swings (left) are used by the villagers, who, according to legend, believe their upward motion helps the annual rice crop to grow high and healthy. Because there is no electricity to power the Ferris wheels, a volunteer jumps up and grabs the leg of one of the occupants and pulls to keep the wheel moving.

After a 20-mile hike on up-and-down trails, we approached the Limbu town of Rabi Bazaar in the twilight. Hundreds of people were celebrating Tihar. Men gambled with cards and dice on the fairgrounds, and in town lines of young men and women held hands as they slowly and somberly danced in the traditional Limbu fashion. The town was so crowded that we couldn't find a place to pitch our tents, so we slept on the floor in the basement of a restaurant. Or rather, we tried to sleep. The music and dancing went on all night.

"How long does this festival last?" I asked a beautiful olive-skinned woman, whose round gold earrings were three inches in diameter.

"Very long," she answered.

"When will the dancing end?" I inquired, surprised at the fact that no one seemed to have stopped to sleep.

"It is a continuous festival, for many days," she announced, and then went back to the dancing.

Stopped by a vertical ice wall

After two months of enjoying festivals across Bhutan and East Nepal, we reached the geographical high point of the whole traverse, the bleak, windswept Tesi Lapcha Pass at 19,000 feet (p. 106). Recently we had trudged up the hot Arun Valley, less than 1,000 feet above sea level, and as we approached 19,000 feet my legs felt leaden and I gasped for breath. Slowly we ascended the final slopes to the pass. To the north an enormous monolithic peak thrust its way into the cobalt-blue sky; to the south Pacharmo, a soft white mountain, seemed to float before my eyes—reward enough for overcoming gravity to this height.

Making our way carefully down the edge of an icefall where towering monuments glistened in the late-afternoon sun, we were stopped by a vertical ice wall. We pitched our tents above the wall.

At dawn, we attached a fixed line to two metal ice screws which were fastened into the ice face and descended, wearing metal spikes called crampons on our boots and using ice axes for balance. Then, suddenly, everything changed. We were walking on dirt, enjoying the miraculous sight of tender green grass

and minuscule white and pink flowers. There were still icicles frozen in Hugh's beard. Several hours below the icefall we saw birds, yaks, people—and suddenly it was hot. Our porters, high-altitude folk, announced that they must return to their homes. They accepted their salaries with a warm smile and a nod of the head to indicate their gratitude. The Nepali language has no word for "thank you." For the next six weeks we crossed the relatively prosperous central Nepal countryside with several trekking groups.

In early January we said good-bye to the last group of trekkers. We were about to enter West Nepal, the most isolated section of our trip. No roads, electricity, running water or well-stocked shops were to be found in the regions that we would cross during the next few weeks. When we told the local people that we were heading west, they were most alarmed.

"There are said to be fierce wild animals and bandits out there. You'd better be careful," a farmer told us. "The people there don't even speak good Nepali. And they don't like strangers," his wife added.

Tragedy in a village square

Three Nepalese agreed to accompany us and help carry our loads: Dil Bahadur Rai, Danu Sherpa and Pasang Tamang. But at the last moment we decided to hire two more porters to lighten everyone's loads. Dumbar Bahadur Tamang and Prem Singh Gurung were walking down the road and agreed to go with us.

A few days later we crossed the Jaljala Pass (12,000 feet) and camped in an exquisite high meadow with sparkling views of Dhaulagiri Himal. In the morning we wandered down through oak, rhododendron and pine forests to the Tibetan-inhabited town of Dhorpatan, where a friend of ours had worked as a doctor several years ago. A shopkeeper stopped us.

"Is any of you a doctor?"

"No."

"Do you have any medicine for these people?"

He pointed to four villagers crouched in the town square with third-degree burns over much of their bodies. A grass fire had got out of control near where they were gathering herbs. They had stumbled down here, desperately needing medical care. There was currently no doctor in Dhorpatan.

I took out my *Medicine for Mountaineering* and read about immediate "evacuation of the patient . . . fluid therapy . . . plasma and saline . . . penicillin and tetracycline." The nearest road was about a ten-day walk; there was nothing to do. The burn victims were obviously extremely poor; at least I could give them money to buy food. As I gave each individual a 20-rupee note, I could not avoid looking in their eyes. Should we abandon our trip to try somehow to help

Arlene Blum and Tibetan friends enjoy meeting in West Nepal, sharing conversation and fried dumplings.

Hugh Swift makes his way up a trail in West Nepal; umbrella was essential gear for many weeks of trek.

Dance of the four skeletons is vivid part of festival celebrating Buddha's birthday at monastery in Zaskar.

these people? But where could we take them and what would they find there? We realized that there was little choice but to continue on our way, yet the look in the eyes of those four burn victims haunted me for a long time afterward.

In West Nepal, there were many days when we went from house to house trying to buy rice, with no luck. In the wild gorge of the Sano Bheri, we had to climb narrow mud paths up sheer rock walls. We also had to cross several memorable bridges: three small logs held together with vines, swaying a few inches above the torrent; an 80-foot-long log two feet wide cut in half for a level but treacherously slick surface; and a staircase of slippery boulders.

The map we were following was made by the Survey of India in 1927 and indicated a route across West Nepal following a series of rivers like the Sano Bheri. "A straight shot down the river," Hugh had remarked optimistically, looking at the faint dotted line drawn on the map more than 50 years ago. We were managing to get through, but "the straight shot down the river" seemed to involve going up and down thousands of feet around cliff faces and crossing numerous imaginatively constructed bridges.

Still without rice, we made camp. A Magar woman with an enormous nose ring gave us a pumpkin, the first fresh vegetable we had had for a week. We were delighted and offered to pay for it but the woman firmly refused our offer. Then a local shaman (holy man), wearing a white suit, threadbare brown sports coat and a large white turban, came down to our camp and presented us with a bag of "holy" rice.

"Eat this and you will succeed on your journey," he told us. I tried to pay him the going price. "No, not money. It is for the success of your trip."

"If you eat meat, it will snow"

To celebrate having got through the gorge, we decided to take a rest day and buy a goat, our first fresh meat in several weeks. Danu, our cook, was a Buddhist monk and at first he was not pleased at the idea of cooking meat.

"If you eat meat, it will begin to snow," he told us gravely. When he returned from the meat-getting expedition leading a small, pert goat on a leash, I relented and said, "Let's not eat him; let's take him along as a porter to help carry a load." We had seen caravans of goat and sheep porters carrying small loads of rice, grains, salt and sugar along the trails of West Nepal. However, now that the goat had been purchased, Danu sensibly thought we might as well go ahead and eat it.

"How many fleas have you killed on this trip?" Danu asked.

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Brahman priest and son joined trek for crossing to Jumla; en route, priest sat down "to die" on slope.

After many memorable bridges, party crosses this precarious span near Padum, in India's Zaskar region.

"As many as I can," I said, "if they are in my tent."

"Then you shouldn't worry about killing a goat. Killing a flea or killing a goat is all the same thing."

The next time I saw the goat it was well roasted and delicious. The following day, thick wet snowflakes were blanketing our camp. When the snow ended we continued on our route along the river and a local fisherman brought us his day's catch. Again I asked Danu to cook it.

"If you eat fish, it will certainly rain," Danu informed us.

We ate the fish and the next day the rains began. Although we wisely refrained from eating fresh meat or fish for the rest of the trip, the weather never got better. This was one of the worst winters that West Nepal had ever experienced. As we continued to march along through the sleet and storm, our porters teased me by singing in Nepali, *"Memsahib maccha khanne bhane pani paryo,"* meaning, You ate fish; that's why it's raining!

For several weeks, Jumla, the regional capital of West Nepal, was our goal. The route was obscure and we were unsure whether we could actually get there in the winter. We were delighted to meet a spry, agile 60-year-old Brahman priest and his bright-eyed 14-year-old son (above) who were returning to their home in Jumla. They proposed that we join forces to get through the snow and difficult terrain en route.

Repeatedly we had to climb from towns at 6,000 feet where it was raining to 10,000-foot-high passes in thickly falling snow. The Brahman said he had never seen the route to Jumla this snowy before.

Our last major obstacle before Jumla was a 1,500-foot climb straight up through deep snow over rock. Kicking my way up a gulley of deep powder snow, I trudged behind the Jumla Brahman and his son.

Suddenly the old man sat down and announced, "I'm dying. Leave me here."

"What's the matter?" I asked.

"Go on; I'm going to die."

"What's the matter?" I demanded.

"I haven't eaten anything in three days, and now I will die."

"You haven't eaten anything?" I was incredulous. He explained that a Brahman priest is required to wash in running water before he can eat rice. As we had been camping on snow, the old man had been unable to wash for several days. Following his religious principles, he had not eaten his rice in all those days. After struggling 1,000 feet up the steep slope, he had completely run out of energy. Now he would die.

I reached into my pack for a sugar mint cake that I kept for emergencies and gave him a piece, urging him to eat. He hesitated, quickly ate the first piece and then devoured the entire pound of mint cake. (Candy can be eaten without bathing, rice cannot.) I took his load: 40 pounds of rice and heavy iron cooking pots. Unburdened and energized by the sugar, the old man

WINE & FOOD

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In our home, we enjoy Cabernet with a wide variety of foods. One I'm especially fond of is our own *Eagle Ranch Roast*, a wine country dish developed by my wife Vicki. Generously seasoned with olive oil, garlic and rosemary, this complex layering of flavors would overpower a wine of lesser body and character.

If you would enjoy sampling some of Vicki's recipes and learning more about wine, please write to the address below for your free brochure, "Wine and Food: Cabernet Sauvignon" a collection of family favorites uniquely compatible with this King of California Wines.

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A young Bhutanese shepherd displays the friendliness that greeted the trekkers across most of their route.

began to move slowly toward the pass. Hugh came down to help with the load and finally we reached the pass. Going down was easy, and quite suddenly the snow ended.

We had stepped from the cold and sterility of the winter snow to green spring fields. The Jumla Brahman immediately went over to a local well, washed himself thoroughly, sat down and proceeded to cook his rice.

After we crossed into India in early March, the local scene was quite similar to that of Nepal: brightly clad women with heavy gold jewelry returned from the forest laden with wood and fodder; men sat in large groups smoking hookahs and chatting; children tended buffalo and herded the cows, goats and sheep. But in India, we occasionally crossed paved roads and walked through villages with electricity, running water and shops stocked with food and goods from all over the country. Away from the roads, village life was untouched by the outside world.

Walking along, I noticed that women seemed to do most of the work. I would see them at dawn high in the trees, lopping off branches to feed the goats and cows, chopping and carrying the wood and fodder, hauling the drinking water, cooking the food, taking care of the house and children, washing dishes and clothes, doing virtually all the farm work. The women broke soil with picks, planted, weeded, thinned, harvested, threshed and ground the grain. They laughed and sang while they worked and did not hesitate to stop and have animated conversations with us as we walked by them.

Surprised at the incongruity between these women's work and their demeanor, I asked a local district commissioner, "Why do your women work so hard and yet seem so happy?"

"Women have a high status in our society," he told me, "because they do the work and the households couldn't survive without them. They are essential and they know it."

"Don't they mind that the men are mostly sitting around drinking tea, smoking and playing cards?"

"No," he said, "the men do the heaviest work: the plowing, the heaviest load-carrying. Of course, the men take care of the money. Women can't do that."

"Why?"

"Women can't handle money because they don't go to school."

"Why don't girls go to school?" I asked. Most of the schools we had walked by had had only one or two girl students amidst the dozens of boys.

"There's too much work for them to do. There's no time for girls to go to school."

Continuing beyond the highest village, our trail disappeared into wild, steep terrain. Our map did not show even a faint dotted line crossing the next pass. The only marks represented cliffs, and there was an ominous blank space indicating an unknown area. We fought our way through brush and bamboo, balanced up and down fallen logs, and finally found ourselves in deep, soft snow. With my boots I kicked steps into 35-degree slopes to the pass.

On the other side we had to descend straight down a rotten cliff of rock, dirt and bamboo, using our rope. Then we found a gully and whooshed down with great delight. We pitched our tents above the gully during a hail storm and collapsed, grateful for a level campsite and a chance to rest.

A well-dressed wedding party

The next morning we had no clues about which direction to go. As we dawdled over our breakfast, eight men dressed in fancy jackets, pressed pants and colorful woven scarves came sliding on their shoe soles down the snow. Since the people in the last village had told us that no one had crossed this pass in years, we were astonished.

"Where are you going?"

"We're going to a wedding."

We skipped down the snow, following the footprints of the wedding guests, crossing several ridges, descending across streams and through forests into Kulu District. I doubt if we could have found our way without the fortuitous wedding on just the right day. Just before the highest village, there was a welcome sign across the trail in English. Everyone was welcome at the wedding, and so we went.

In Kulu, every few days we came to a village just in time for its annual *mela* or fair in honor of the local god. In Sarahan we met their local god, a 500-year-old,

80-pound statue, as he was carried down from a hilltop where he had interceded with the rain god for a respite in the downpour that was threatening the crops. And indeed the sun shone for the next two weeks. In Malana, another Kulu village, the local god was less friendly. He had told the villagers they should have nothing to do with outsiders. Since the main trail goes through the village, foreigners could not be completely excluded, but we were warned that we should not set foot off the main path. In Manali, we enjoyed the biggest *mela* of all; gods from seven villages were honored by 60 dancers and thousands of spectators.

We also reached Burdun Gomba in Zaskar, Ladakh, on a most auspicious day. Once a year at the spring full moon, the *gomba* celebrates Buddha's birthday with a masked dance, enacting traditional stories from the life of the great Tantric master Padmasambhava (Lotus-born).

Zaskar reminded me of Bhutan where we had begun our walk. Both are Buddhist and medieval in life-style. But in the remote and peaceful kingdom of Bhutan, Western influences are coming in a slow and controlled fashion. Ladakh, on the other hand, as part of democratic India, is experiencing rapid change.

As we walked north, we met a caravan of huge hairy yaks with enormous loads. They were heading back to the mountains.

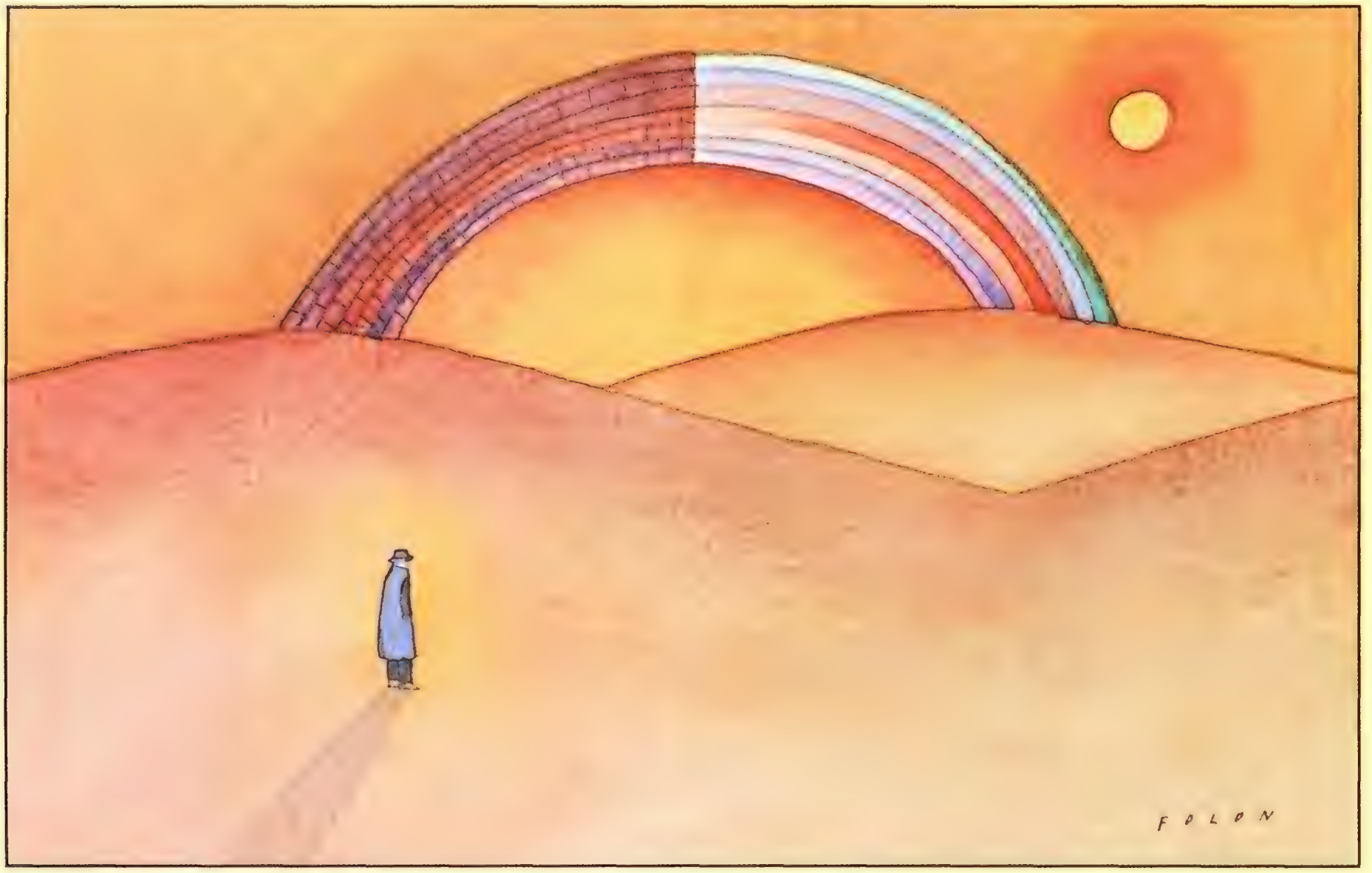
"What are these loads?" I asked the monk who was herding the yaks.

"Dynamite to make roads and sugar to put in tea." These Western goods on the traditional beast of burden were a striking example of the changes that were inevitably coming, even to the most isolated regions.

On June 15, 1982, nine months after our departure from eastern Bhutan, we finally reached Lamayuru (below), a monastery situated dramatically on a barren hill just south of the restricted area leading to the India-Pakistan cease-fire line. We had had no idea where or when we would have to end our trip. Now we could go no farther. Suddenly, a monk approached us, asking, "Are you Hugh and Arlene?" We were dumbfounded. In the mysterious way of the East, word of our coming had preceded us.

Lamayuru monastery in Ladakh, an old Buddhist outpost on the rim of the Indus Valley, stands upon a barren hill near the restricted region of the India-Pakistan cease-fire line. Traverse ended here.

ENERGY OPTIONS
The Practical and The Promising



The energy crises of the 1970's jolted America into greater awareness of alternative energy development. Some of the alternative sources being explored today will play an increasing role in the years to come. The question is, how much will the new alternatives be able to supplement our major energy sources?

Although overall energy demand in the U.S. dropped slightly over the last decade, the use of electricity actually rose more than 20 percent. This electrification trend has gone on throughout the century and is expected to continue. The United States Department of Energy recently reported that "the economy is very likely to turn increasingly to electricity for its energy requirements."

As this reliance on electric energy continues to grow, *all* the resources that can generate electricity are being examined. Some of the alternatives are discussed here. Others, like fusion and ocean thermal energy conversion, may play a role in the more distant future.

Sun, wind, earth, and water

SOLAR. In some respects, solar energy has begun to pay off. For the heating of water, solar systems are now economically competitive in some regions of the U.S. with plenty of sunshine. Also, there are new buildings benefiting from "passive" solar designs. They utilize the sun through nonmechanical means such as skylights and heat-storing rock beds.

For the generation of electricity, however, solar technologies are in early stages of development. Although some limited uses are being made, solar electricity is still too expensive for widespread practical use.

One possible system is the solar-thermal electric station, or "power tower." A small solar-thermal plant in the Mojave Desert uses a large field of mirrors to track the sun and focus its heat onto a centrally mounted steam boiler that drives a turbine-generator.

Another solar electric technology is photovoltaics. It uses silicon or other semiconductors to convert the sun's rays directly into electricity. Researchers are working on increasing the efficiency and reducing the high costs of photovoltaics.

WIND. Wind power, like many alternative energy sources, depends on geography. It is most promising in the Great Plains, in mountain passes,

and along coastal areas, where winds are strong and steady.

Some of the larger wind projects have had problems. But they are being addressed, and utility companies today are involved in well over 100 wind-power research projects. California's Energy Commission has

Reliability and strength of the wind play an important role in the location of "wind farms" like this one in Altamont Pass, east of San Francisco. Wind generators are spread over hundreds of acres of land.

predicted a wind-power potential of 1000 megawatts for the state by the year 2000, if current trends continue. That's the equivalent of one major electric power plant, or approximately 2 percent of the state's present electrical capacity.

GEOTHERMAL. The internal heat of the earth is another energy source. Geothermal energy is captured from hot water or steam created by hot or molten rock. 1300 megawatts of geothermal electric capacity are now available in this country, mostly in California.

HYDRO. Falling water generated almost 14 percent of the nation's electricity last year. Most U.S. sites for large-scale hydro projects are already in use, but there is potential for further development of low-head or "minihydro": the use of small and medium-sized dams, either newly built or upgraded. By 1985, there may be about 400 new small-scale hydro projects, largely in the Northeast. Like other energy sources, though, hydro has limitations. These include the environmental changes that can be caused by damming a river, as well as the uncertain reliability of power that is fed by rain and snow.

BIOMASS. This term refers to a wide variety of fuel sources, including plant and animal waste, wood, algae, and garbage. The largest user of biomass in the U.S. today is the forest products industry, which gets about 50 percent of its energy from wood wastes. Another form of biomass is methane gas produced from decaying organic materials.

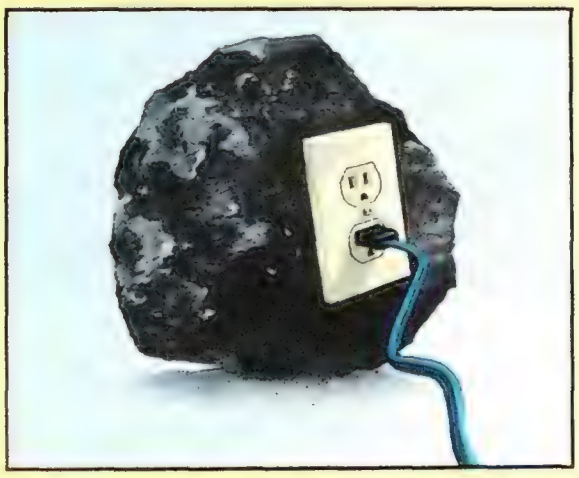
Energy sources we can count on today

Some of our important energy options involve not new production technologies but more efficient ways of delivering and using energy. So conservation methods, including industrial cogeneration, will also help meet our energy needs.

With all of America's energy alternatives, it's easy to forget how much of our electric power will still be generated from conventional fuels. The Department of Energy projects that by the year 2000, over 80 percent of the country's total electricity generation will still come from the abundant domestic resources of coal and uranium.

Oil and natural gas are more valuable fuels for transportation and manufacturing than for burning in power plants. Also, these fuels, especially oil, are subject to uncertainties over price and future supply.

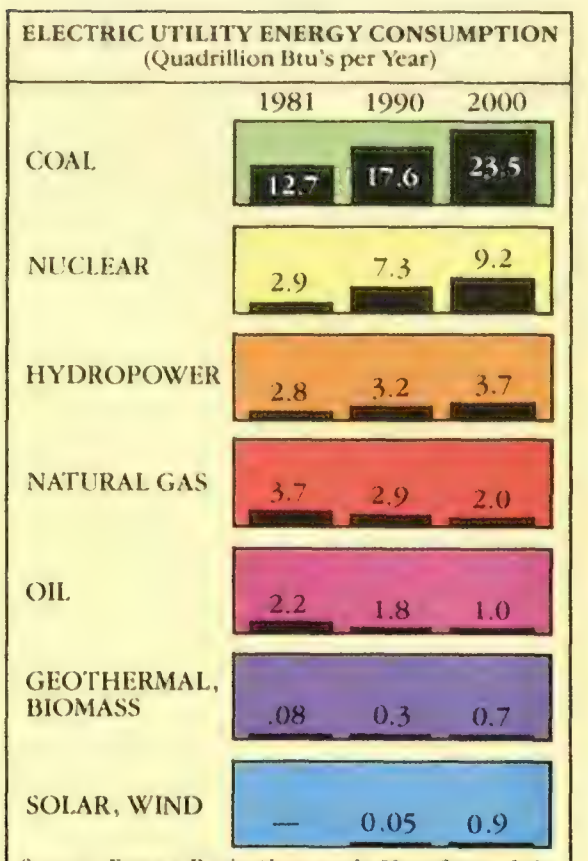
On the other hand, we have enough coal to last hundreds of years. Coal will remain our dominant



We have enough coal in the U.S. to last hundreds of years. It is estimated that by 1990, electric utilities will be burning over 780 million tons of coal a year to supply more than half of America's electricity.

source of electricity. And advanced technologies such as coal gasification and fluidized-bed combustion are creating new ways to burn coal cleanly.

To secure a well-balanced supply of energy, America is also relying on nuclear power. Aside from the 80 plants already generating nuclear electricity in the U.S., 56 more have been granted construction permits by



The Department of Energy foresees sizable growth for both nuclear energy and coal in this country's electrical future.

the U.S. Nuclear Regulatory Commission. And they are being built.

A steady and secure supply of electricity is critical for a healthy economy. Some of the alternative energy sources discussed here may eventually become significant contributors to America's electrical supply, depending on what part of the country you live in. Some may not. Whatever the future holds, we need to take advantage of the domestic energy resources already within our reach. We need to understand not only the electricity potential of tomorrow, but the electricity realities of today.

For a free booklet on *Energy Options* and the electrical future of America, send this coupon to:
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Information about energy America can count on today

U.S. COMMITTEE FOR ENERGY AWARENESS

At the beginning of a rally, the steam engines lumber through a grand parade as they vie for "best in show."

By William Siddle

The age of steam is alive and well in rural England

At countryside rallies, herds of antiquated traction engines huff and puff and strut their stuff, just as they did in bygone days

"If the secret of being an Englishman is to be found anywhere," a London journalist once wrote, "it is in the past." Which perhaps explains why, on any weekend in the towns and villages of rural England, one might encounter a herd of primordial machines moving through the grassy fields with the ponderous grace of elephants. Resplendent with polished brass and liveries of green, gold, red and maroon, these lumbering giants, in a haze of steam and smoke, puff and chug as they pass before thousands of eager spectators in grand parade.

They are called steam traction engines. In the era before the dominance of gasoline and diesel fuel and electricity, they would wend their slow, stately way from village to village to plow the fields or thresh the

grain, to surface the roads or power the merry-go-rounds of traveling carnivals.

In the late years of the 19th century and the earlier decades of the 20th, steam traction engines were found throughout much of the world, including the United States. There are a host of traction engines and their aficionados in America—last year a meet in Mount Pleasant, Iowa, included 70 traction engines and drew 57,000 spectators, and the National Museum of American History has on display a superb example of a 1924 Huber. It is a general-purpose engine that was used to power a sawmill. But the steam machines eventually proved economically impractical to farmers in this country, where they soon gave way to the more efficient gasoline-powered vehicles.

A British zeal for re-creation

It is in England that their restoration has reached its apotheosis, and there that they have become part of a collective heritage. With peculiarly British zeal their owners—businessmen, bank clerks, dentists, a steeplejack—have re-created them from rusting heaps of discarded iron. The engines have been rescued from the oblivion of scrap heaps, old barns and the deserted corners of fields, then cleaned, polished, refitted with replacement parts, painted, oiled, coaled and triumphantly restored to life. Now each summer as many as a hundred of these gleaming giants will perform at each of 80 traction-engine rallies held throughout the English countryside.

The first portable steam engines were built in the early 19th century, and when those used for agricultural work became self-propelled, in midcentury, the traction engine was born. At that time John Fowler—the most revered name in British traction-engine history—was developing plows and other cultivating machinery. By the beginning of the 20th century, many manufacturers were turning out engines for agricultural use. Their heyday was in the period just before World War I, but the development of gasoline tractors led to their rapid decline. A few were still used in England as late as the 1950s, but almost all of the engines on display at a typical rally were built between 1900 and 1930.

The idea of holding such events was born in 1950, when two men, both owners of traction engines, were enjoying a pint of ale in a quiet pub and discussing the merits of their respective engines. Unable to agree about which was the better, they arranged a challenge match. The engines would race along a short course, the winner to receive a firkin of beer—about nine gallons—from the loser. History does not record whether the winner was magnanimous enough to share his trophy, but a return match took place the following year. Soon more races, with more competitors, were being held. Wise heads realized that this proliferation needed some degree of regulation and control—"We couldn't have these giants charging about all over the place" said one early enthusiast—and so in 1954 the National Traction Engine Club was formed by the engine owners. This has become the national coordinating body for the work of the steam-preservation movement, with a membership of more than 3,500; there are 70 affiliated clubs and 400 rally organizers.

Rallies may last from one to four days and are eagerly awaited social occasions in the countryside. There are many supporting players—mud wrestlers, hot-air balloonists, motorcycle daredevils, merry-go-rounds—but the stars of the show are the engines, which compete against each other in a variety of events. In one race, teams of engines run a kind of slalom course, zigzagging around oil drums and other obstacles as each driver strives to coax the last ounce

An eight-foot smokestack extension is added to a showman's engine to protect the crowds from soot.

Retired business executive William Siddle has written numerous articles and children's books in England.

Photographs by Jerry Young

A grand parade of steam giants

This 22-ton 1922 Fowler engine could cable-plow 25 acres a day when teamed with another steam machine.

Star of showman's engines, *Supreme* is pride of Jack Wharton (left) who rejected a $100,000 offer for her.

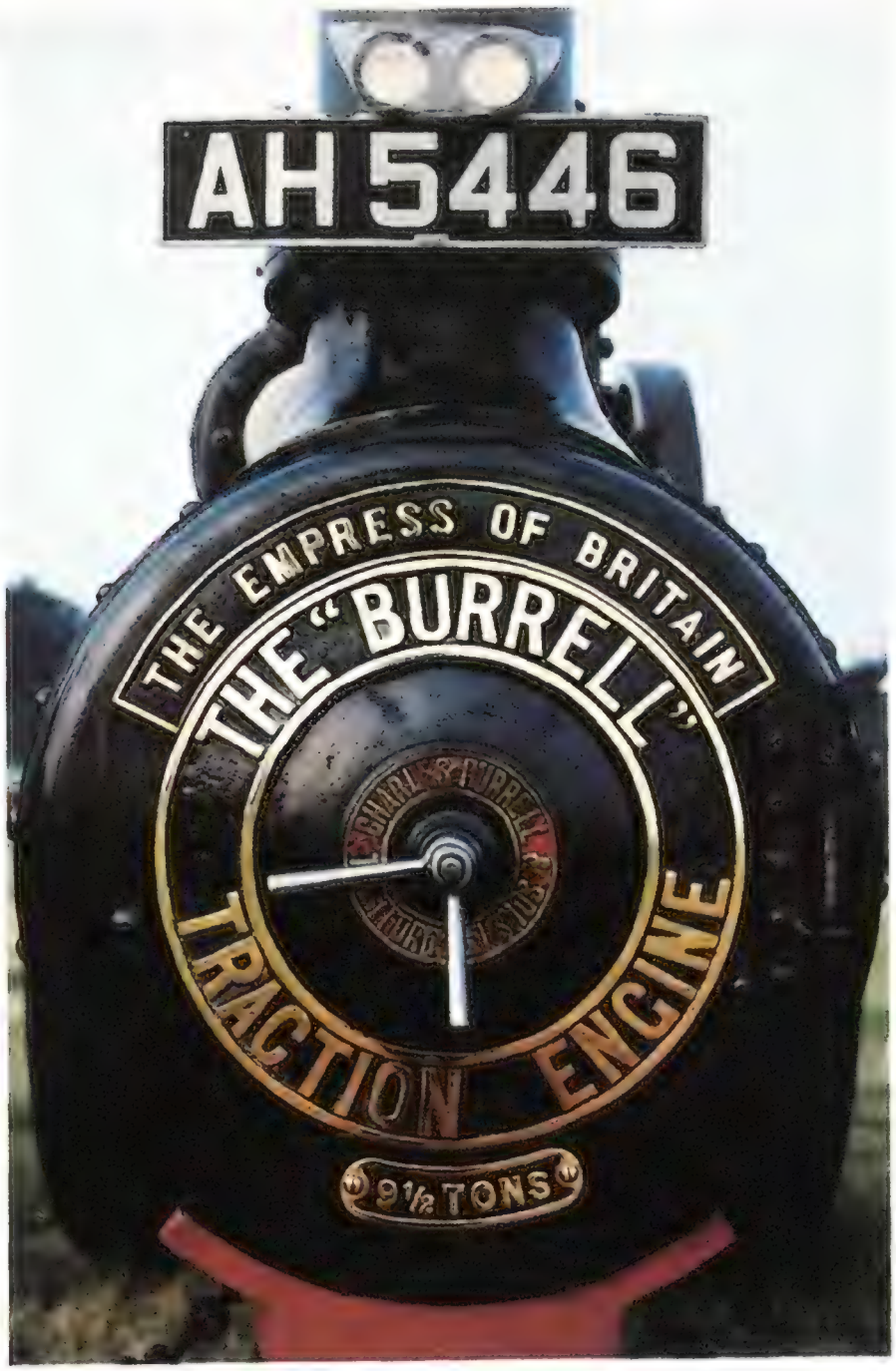
of maneuverability from his machine. When he reaches the far side he hands over a baton to the driver of another vehicle, who takes off in the opposite direction—a relay race for machines.

In another event, the huge engines play musical chairs. The machines circle a row of chairs, one fewer than the number of engines. Music blares from the public-address system, and when it stops the drivers leap from their machines and race to the chairs. The man who fails to find an empty one is promptly eliminated, as well as his machine. Another chair is then removed and off they go again, until only one engine is left—the winner.

The engines at a rally are of several types—including general-purpose agricultural engines for threshing and sawing, plowing engines, steamrollers and showman's engines. These have individual characteristics which make them easily distinguishable from one another.

Plowing engines are squat, with two large wheels at the rear and two smaller wheels at the front. The frame is surmounted by a cylindrical boiler with a fire-

Her electric lights illuminate the carnival around her just as they did at traveling fairs 50 years ago.



The 1912 *Empress of Britain* is adorned with levers that open door of smokebox so it can be cleaned.

box at the back, and topped by a tall smokestack. Two prominent features are a huge flywheel at one side and a winch drum fitted beneath the boiler. Plowing engines typically weigh between ten and 18 tons, are between 16 and 24 feet long, and burn up to one ton of coal a day when in full operation.

For plowing, the engines worked in pairs. They were driven to points in the field directly opposite each other. A wire cable from one was attached to one end of the "balance" plow, a cable from the other to the opposite end. A plowman sat in the center of the plow, stationed beside one engine. He tilted the plow so that the set of plowshares inclined toward the other engine dug into the earth. The faraway engine gradually winched the plow across to its side. The engines moved up for the next furrow and the plow was pulled the opposite way. Accurate positioning of the engines was necessary, but the skill of the plowman in steering a straight course was vital. A skilled team could plow about 25 acres a day in this way.

Purchasing and running a pair of plowing engines

Traffic policemen take lunch break at a rally, which is an eagerly awaited occasion in English towns.

These drivers restored their own steamrollers, once a common sight wherever roads were being surfaced.

With a woman steering and a sooty engineer at the controls, a Fowler engine joins grand parade.

was beyond the financial resources of many farmers, so teams of traveling workers were set up to operate on a contract-hire basis, going from farm to farm.

While plowing engines have been restored, nothing can replace the lifelong experience of the old steam man. Working a towed plow across a field required a skill given to few men, and it is a dying art. Steam plowing is, with rare exception, no longer practiced, although an occasional demonstration is still organized as part of a rally program.

Another type of engine is the ubiquitous steamroller, once seen in large numbers wherever asphalt surfaces were being laid, moving steadily back and forth to flatten the surface.

Most dazzling of all are the showman's engines, which moved fair wagons all over England and provided power for generating electricity and driving the merry-go-rounds. Each bears a full-length canopy over the engine, supported at front, rear and center by pairs of highly polished, twisted brass poles—the characteristic identification mark of the showman's engine. The name of the owner, his address and his business are hand-lettered, usually in gold, along the sides of the canopy, which is strung with electric-light bulbs. The giant wheels are brightly colored and the sides of the engines often are trimmed with ornate nameplates as well as plaques and emblems from rallies and shows.

"A real beauty for you to admire"

The beginning of a rally is the grand parade, when perhaps a hundred engines chug in slow procession past judges and spectators for determining which will be chosen "best in show." Each in turn is introduced over a public-address system. "First, we have a real beauty for you to admire. She is called *Lady Elizabeth*, she is 70 years old, has just had an extensive face-lift and been restored to full working order."

To be best in show means no oil leaks, no play in the bearings, no hissing of steam from ill-fitting joints in the pipework, no rust, no dirt, highly polished brasswork, gleaming paint. The judges even consider how the engine got to the rally—while transporting it on a truck is the easiest way, extra points are awarded to those driven there under their own power.

Doyen of the traction-engine movement is Jack Wharton (pp. 122-23), a lively veteran of hundreds of rallies. He is president of the National Traction Engine Club, an engineer and an engine fanatic. Wharton owns eight engines and participates in rallies with several of them. The apple of his eye is a showman's engine called *Supreme* which is one of the finest in the country. *Supreme* was built in 1934, one of the last of its kind, and was about 25 years old when Wharton bought it. He spent 12 years and 25,000 man-hours

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Kodak Carousel projectors. What a way to show!

© Eastman Kodak Company, 1983

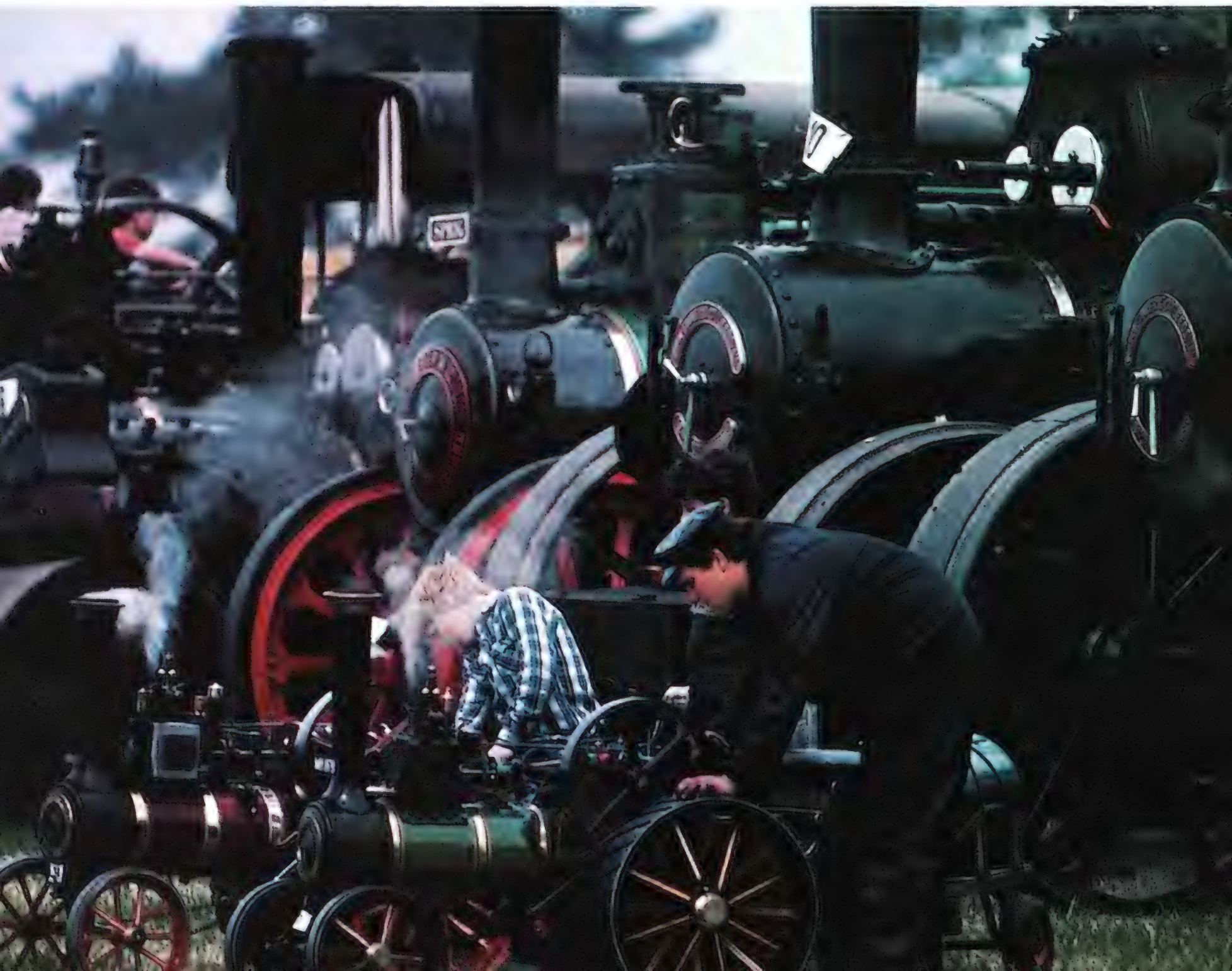
rebuilding and restoring it to his satisfaction. When the work was completed, *Supreme,* in glittering deep maroon with bright-yellow wheels, was ready for the critical eyes of the rally audience.

Wharton runs a small mechanical and electrical-engineering business which mass-produces small parts for the automobile industry and also tackles custom machine work, and so is an ideal business for someone with Wharton's hobby. In his workshop now is an engine that he has been working on for the past four years, and in his yard stands another waiting its turn for refurbishing.

Tracking down the original mechanical specifications—if they still exist—cleaning, polishing, descaling, measuring, making new parts, fitting them, testing, waiting weeks or months to obtain just one tiny part—these are typical of the tasks faced by Wharton and all the other steam enthusiasts. Why do they do it? Profit is certainly not the answer. "It would be pretty silly coming to the next show on a pile of money," asserted Jack Wharton after refusing an offer of more than $100,000 for *Supreme.*

There is a mystery and attraction about steam power that is difficult for the uncommitted to understand. For the older generation it may invoke nostalgia for things past. For the young it may be the excitement of something new, yet old. Perhaps it is just a love of machinery, gleaming, well-oiled machinery, functioning to perfection. Maybe it is the glow of pride at having a large audience show its appreciation of a job well done. Perhaps only a few of these dedicated enthusiasts would subscribe to the thought that they are creating a new kind of museum, yet that is what they are doing—a living museum in which an obsession is bringing new life to a part of industrial history long thought dead.

During the past ten years these scale models have become popular among the steam-engine enthusiasts. The miniatures have their own devoted fans who demonstrate and show off their homemade replicas.



A carat or more.
Because you were never very good at fractions.

Your jeweler can show you many diamond solitaires of a carat or more. This necklace features a 1.14 carat diamond.

A carat or more–one in a million.

Every diamond is rare.
But of all diamonds found, a solitaire of a carat or more is only one in a million.

And, like love, becomes more precious with time.

A miracle among miracles.
Born from the earth. Reborn on a woman.

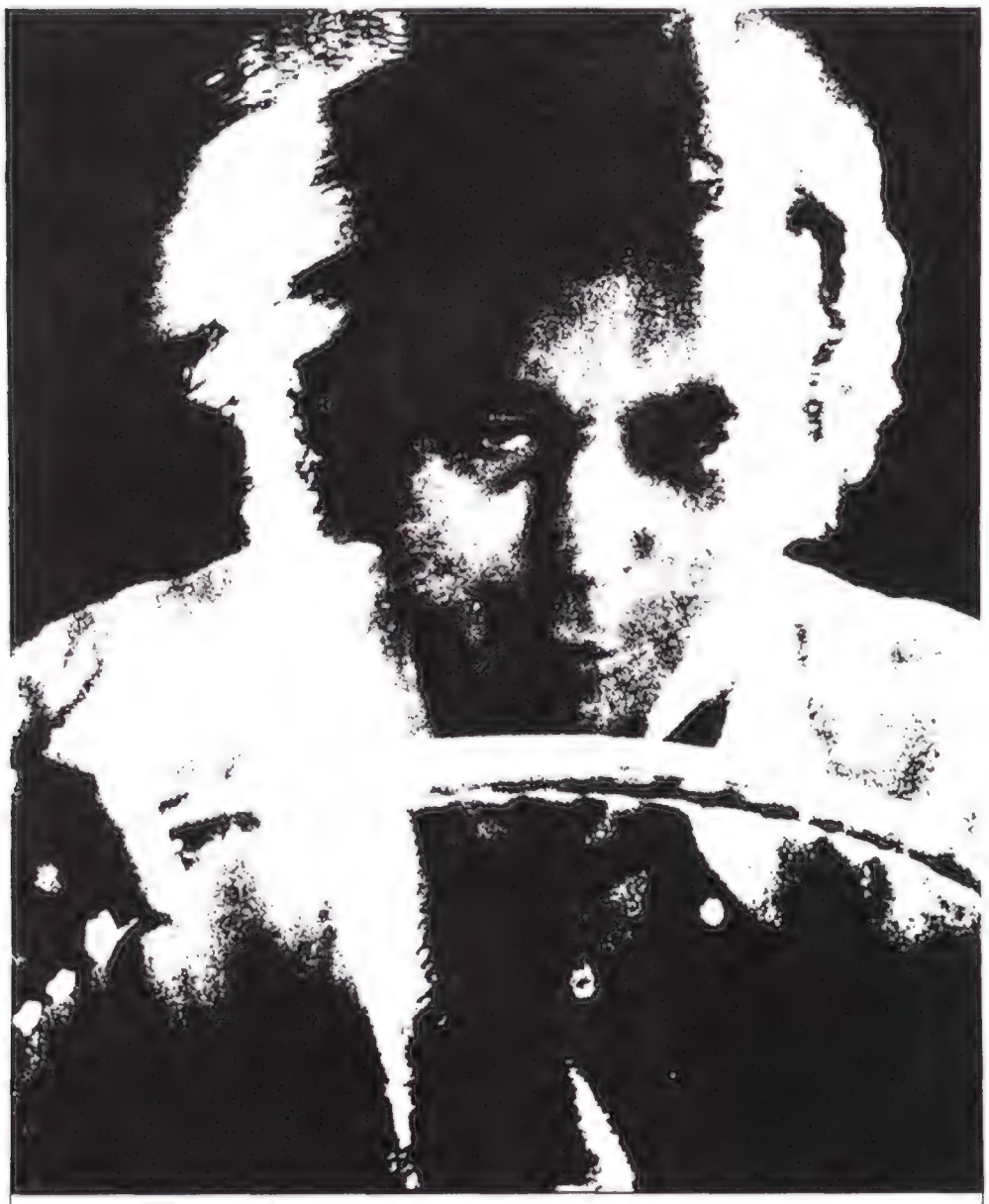
The extraordinary diamond of a carat or more.

Show the world you couldn't have made it without her.

A diamond is forever. De Beers

DRUNK DRIVIN

A national survey to help you evaluate your state. Compiled by the property and casualty insurance industry.



The drunk driver kills thousands of Americans a year, and injures more than half a million. This series of anti-drunk driving advertisements is dedicated to reducing this toll. Its purpose: to serve as a rallying point for the thousands of individuals and many organizations actively fighting drunk driving in America today. All data are as of August 1, 1983.

State	Drinking age	1st offense license suspension
Alabama	19	90 days
Alaska	21 (1/84)	90 days (10/83)
Arizona	19	30 days
Arkansas	21	90 days-1 yr.
California	21	None
Colorado	21; 18, 3.2 beer	1 yr. (.15 BAC)
Connecticut	20 (10/83)	6 mos. (10/83)
Delaware	21 (1/84)	3 mos.
District of Columbia	21; 18, beer & wine	6 mos.
Florida	19	6 mos.
Georgia	19	1 yr.
Hawaii	18	90 days
Idaho	19	180 days
Illinois	21	1 yr. max.
Indiana	21	60 days-1 yr.
Iowa	19	120 days
Kansas	21; 18, 3.2 beer	Limited use
Kentucky	21	None
Louisiana	18	60 days
Maine	20	45-90 days
Maryland	21	60 days max.
Massachusetts	20	30 days-1 yr.
Michigan	21	6 mos.-1 yr.
Minnesota	19	30 days
Mississippi	21; 18, 3.2 beer	90 days-1 yr.
Missouri	21	90 days
Montana	19	6 mos.
Nebraska	20	6 mos.
Nevada	21	90 days
New Hampshire	20	90 days
New Jersey	21	6 mos.
New Mexico	21	None
New York	19	6 mos.
North Carolina	21; 19, beer & wine	1 yr.
North Dakota	21	91 days
Ohio	21; 19, beer	60 days
Oklahoma	21	1 yr.
Oregon	21	1 yr.
Pennsylvania	21	1 yr.
Rhode Island	20	3-6 mos.
South Carolina	21; 18, beer & wine	6 mos.
South Dakota	21; 18, 3.2 beer	30 days
Tennessee	19	1 yr.
Texas	19	1 yr. max.
Utah	21	90 days
Vermont	18	1 yr.
Virginia	21; 19, beer	6 mos.
Washington	21	90 days
West Virginia	19	6 mos.
Wisconsin	18	3 mos.
Wyoming	19	90 days

Note: 1. Higher of "presumed intoxicated" or "defined as intoxicated" BAC number
2. REDDI = Report Every Drunk Driver Immediately

America is at war. In every state, the battle is on against drunk drivers.

How does your state measure up? Many states have reduced fatalities by increasing the drinking age. Or adopted proven deterrents such as roadside sobriety checks and suspended licenses.

In most states, organizations such as Mothers Against Drunk Drivers

G IN AMERICA

State task force	Blood Alcohol Concentration (BAC) defining Driving While Intoxicated (DWI)	MADD, SADD and RID chapters	Pending legislation	Existing measures
Yes	0.10	MAD, SADD, RID		Dram shop liability (statute holding retail server of alcohol responsible for its consequences)
No	0.10	MADD, SADD, RID		
Report issued	0.10	MADD, SADD, RID		
Report issued	0.10	MADD, SADD	Mandatory rehabilitation	
Report issued	0.10	MADD, SADD	Simplified legislation to clarify laws	Toll-free number to report DWI suspects
Yes	0.15[1]	MADD, SADD, RID	Drinking age 21; revocation 0.10 BAC	REDDI[2] line; admin. lic. revocation; dram shop
Yes	0.10	SADD, RID		Dram shop liability
Yes	0.10[1]	MADD, SADD		
No	0.10[1]	SADD		
Yes	0.10	MADD, SADD, RID		Statewide rehabilitation program
Report issued	0.12[1]	MADD, SADD, RID	Drinking age 21; dram shop liability	
Report issued	0.10	SADD		
No	0.10[1]	SADD, RID		Toll-free REDDI hot line
No	0.10	SADD, RID		Dram shop liability
Yes	0.10	MADD, SADD, RID		
Report issued	0.13[1]	MADD, SADD, RID	Drinking age 21; REDDI program	Toll-free line; CB radio watch; Dram shop liability
Report issued	0.10	MADD, SADD, RID	Driving while impaired 0.05-0.10 BAC	REDDI hot line
Yes	0.10	MADD, SADD, RID		
Yes	0.10	MADD, SADD		Mandatory education and community service
Yes	0.10	SADD		
Report issued	0.13	MADD, SADD		
Report issued	0.10	MADD, SADD, RID	Drinking age 21	Dram shop liability
Yes	0.10	MADD, SADD, RID		Dram shop liability
Yes	0.10	MADD, SADD		Dram shop liability
Report issued	0.10	MADD, SADD, RID		
Yes	0.13[1]	MADD, SADD, RID		REDDI program; administrative license revocation
No	0.10	SADD		Montanans Against Drunk Drivers organization
Yes	0.10	MADD, SADD	Age 21; open container; license revocation	REDDI program; trooper incentive program
No	0.10	MADD, SADD		New law: 2 days in jail or 48 hours of public service
No	0.10	MADD, SADD, RID		
Report issued	0.10	MADD, SADD		$1,000 license surcharge for convicted drivers
Report issued	0.10	MADD, SADD	Blood test for drivers in serious accidents	"STOP DWI" education program; dram shop
Report issued	0.10	MADD, SADD, RID		Limited dram shop liability
Yes	0.10	MADD, SADD		Dram shop liability
Yes	0.10	MADD, SADD, RID	Education program for first offenders	REDDI program; dram shop liability
No	0.10	MADD, SADD, RID	BAC to .05; breath tests for serious accidents	
Yes	0.08 (10/83)	MADD, SADD		Dram shop; REDDI program; CB reporting system
Report issued	0.10	MADD, SADD, RID		Dram shop liability
No	0.10	MADD, SADD		Toll-free hot line; Dram shop liability
Yes	0.10	MADD, SADD, RID	Drinking age 20 (beer & wine); open container law	
No	0.10	SADD		
No	0.10	MADD, SADD, RID		Mandatory education requirement
Report issued	0.10[1]	MADD, SADD, RID		Hot line program
Report issued	0.08	SADD, RID		Dram shop liability
No	0.10	MADD, SADD, RID		Drinking age 19 vetoed by governor; dram shop
Report issued	0.10	MADD, SADD		
Report issued	0.10	MADD, SADD		Toll-free hot line; CB radio reporting system
Report issued	0.10	MADD, SADD		Administrative license suspension
No	0.10	MADD, SADD, RID		Dram shop liability
No	0.10	SADD	Drinking age 21; BAC .08; no plea bargaining at .10	Toll-free REDDI hot line; Dram shop liability

(MADD), Students Against Driving Drunk (SADD) and Remove Intoxicated Drivers (RID) are working effectively with legislators to fight drunk driving.

Most important are changes in the attitudes that once condoned drunk driving. The results of these changes in the form of new legislation, stricter enforcement and reduced death tolls are already a hopeful sign.

What can you do in your state?

Begin by reading our report, *Drunk Driving: A Killer We Can Stop.* It explains what every one of us can do to help. We'd like to send you a copy free of charge, as well as additional material to help you do something about drunk driving.

INSURANCE INFORMATION INSTITUTE
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DO SOMETHING.

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110 William Street, New York, NY 10038

Please send me at no charge
☐ A copy of *Drunk Driving: A Killer We Can Stop.*
☐ A list of organizations active in my state.
☐ Your bibliography on drunk driving.

Name

Address

City State Zip K1

By Prince Michael of Greece

Crowning glories: sumptuous jewels of dynastic Europe

From Charlemagne's coronation until recent days, gems and precious metals have played dramatic roles in the lives, legends of nations

Charlemagne's Crown, c. 961, of gold plates hinged with pearl-topped pins, can be taken apart or folded.

"It scratches," said France's Henry III, who was to die at the hands of an assassin. "It's uncomfortable," said Louis XVI, who was to die on the guillotine. What these doomed monarchs complained of was a crown produced in the early 13th century by King Philip II Augustus, who claimed it was the Crown of Charlemagne in order to forge a link back to the great and long-extinct dynasty of the first ruler of what became the Holy Roman Empire.

The uncomfortable jewel served in the coronation of 23 kings of France. So important to European rulers was the concept of a "Crown of Charlemagne" that over the centuries there were three: the first (right), fashioned in the 10th century for the Holy Roman Empire of Germany; the second, which discomforted the French kings; the third, created for the coronation of Emperor Napoleon I, who never wore it, preferring to crown himself with a circlet of golden laurel leaves. Nothing, in fact, is known of the real Crown of Charlemagne except that it was the mother of all the crowns of Europe, from the Byzantine style worn by Ivan the Terrible in 1547 for his coronation as Russia's first Czar (p. 135), to the masterwork of Renaissance goldsmiths fashioned in 1602 for the Hapsburg emperor, Rudolf II (opposite).

Crown of Rudolf II, 1602, carried sapphire believed to break fevers, heal wounds, strengthen the heart.

Once the symbols of enormous power, these crowns, along with the scepters, orbs and swords—the other "indispensable instruments of coronation"—are now hardly ever used. The 20th century has seen the fall of a number of European monarchies; only a few remain, stripped of their power but imbued with a prestige they often lacked in former times. Crowns and scepters and other royal treasures, the "crown jewels," today are simply trinkets honored at funerals and accessions. Only Britain still makes full use of them at coronations and the openings of Parliament. Like the monarchies, the crown jewels, once the object of rivalry and quarrels, once the source of tragedy, have come to the end of their adventures and seem of minor consequence now. It was not always so.

On Christmas Day in 800 during a visit to Rome, Charlemagne, King of the Franks and the era's leading figure, decided to go and pray at the tomb of the Apostle Peter. Emerging from the barbaric chaos of the high Middle Ages, Charlemagne had been the first to impose some order and unity on the Continent; on several occasions he had come to the rescue of Pope Leo III, who as a result was deeply in his debt. On this day, Charlemagne entered the Basilica of St. Peter, kneeled before the high altar and sank into lengthy prayers. Minutes later the Pope tiptoed up behind him and, without warning, jammed a crown on his head. The forewarned audience roared: "To Charles August, crowned by God, Great and Peaceful Emperor of the Romans, long life and victory. . . ."

Sweden's Eric XIV ascended throne in 1560; globelike orb may have symbolized his prowess in geography.

Called "Szczerbiec" or "nicked," 1200s sword was used in coronation of Poland's King Ladislaus the Short.

The Pope had paid his debt to Charlemagne, and that coronation can logically be called the ancestor of all European coronations.

The Empire of the West, launched for Charlemagne, eventually grew into the Holy Roman Empire, which lasted under various forms for ten centuries until Napoleon Bonaparte abolished it with a flick of his pen in 1806. These centuries saw the emergence of instruments of imperial coronation. First, as we have seen, came the so-called Crown of Charlemagne, the most majestic of all crowns. It is the epitome of the mystical symbolism so dearly loved by the Middle Ages. The octagonal shape, unusual in European crowns, recalls the walls of Rome, the ramparts of Heaven, the dignity of the Emperor; the number "eight" is also linked to perfection and eternal life. The placing of the gems on the sides symbolizes the Revelation of St. John the Evangelist and imitates the breastplate of the high priest of Israel. The magic with which the Middle Ages imbued precious stones is indicated, for example, by the preponderance of sapphires among the many emeralds, amethysts, rubies and pearls; it reminds us that as symbols of strength they afforded protection against many diseases, including cardiac weaknesses. The figures enameled on gold plaques represent the Emperor's predecessors, the Prophet-Kings David and Solomon, hinting at the mixture of religious power with the temporal.

(Ironically, ten centuries after this crown was made, Adolf Hitler annexed Austria and demanded that the

jewel be brought to Nuremberg from Vienna. In an attempt to defend the crown, the Austrian curator pointed out that it carried enameled portraits of two Jews, David and Solomon. Hitler hesitated, but pressed his demand nonetheless. When the Americans liberated Nuremberg, the crown had disappeared. Local Nazi leaders, arrested and questioned, insisted that it had been thrown into the deepest lake in Austria. Unconvinced, the American officers detained the Mayor of Nuremberg who, under considerable pressure, revealed the truth: Heinrich Himmler, Hitler's S.S. chief, had given orders to hide the crown and spread the legend of its disappearance. Following the mayor's instructions, the Americans climbed deep underground, where they found a locked copper chest containing the Crown of Charlemagne. It was returned to Austria, where it remains to this day.)

Later the indispensable instruments of coronation multiplied to include scepter, orb and sword. The scepter—the judge's staff—symbolized the ruler's judiciary power and took its origin in ancient Egypt. A scepter adorned with a large enamel lily (right) was the most beautiful, most poetic of the new "instruments" that Denmark's Frederick III ordered to symbolize the power he had secured when the Danish monarchy became absolute and hereditary in 1660.

The orb, descended from the cosmic sphere of antiquity, an image of inhabited and uninhabited lands as well as of all Creation, symbolized the Emperor's domination of the world—a Christian world subject to the cross which surmounts the orb. When Eric XIV came to the throne of Sweden in 1560, he wanted his coronation to be remembered and so ordered new instruments; his unique orb (opposite) bears a map of the world and recalls Eric's advanced knowledge of geography. Sadly, his reign was disastrous; he was deposed in 1569 and thrown into a dungeon, where he consoled himself with music and the composition of psalms. In 1577 he was poisoned.

Charlemagne's sword: from Heaven or Hun?

The sword—a good example is the steel-bladed coronation sword of the kings of Poland (opposite)—symbolized the ruler's military authority. It testified to the fact that the most venerable dynasties earned their thrones by feats of arms. It reminds us that the law of the strongest always prevails. The harshness of this reminder is mitigated by the legend that an angel from Heaven handed Charlemagne the sword later used in the coronations of the Holy Roman Emperors. Was it in fact a gift from the Caliph of Baghdad, Harun al-Rashid? Or had it belonged to the King of the Huns, Attila himself? Here the possible fact could be even more romantic than the legend.

Crown, scepter, orb and sword formed the nucleus of the jewels of every king and queen. Other instruments of coronation were added later: bracelets (symbols of sincerity and wisdom), spurs (chivalry), the ring (cousin to the pastoral ring), the ampulla (a precious vessel for holy oil used to anoint the sovereign).

No instrument of coronation in Europe had a prestige or an aura approaching that of the Crown of Charlemagne. Its mere possession constituted a sort of legitimacy, a conferral of power. No one could call himself Emperor who did not have the crown. There was in theory only one Emperor, and all the kings in the world were no more than his vassals—but the latter were determined to contest this state of affairs. "National" dynasties emerging from the swamps of feudal

Denmark's monarchy became hereditary in 1660; Frederick III used new "instruments," one a scepter.

A masterpiece of 16th-century regalia, crown was pawned by Christian IV of Denmark in wake of Thirty Years' War.

Sweden's phenomenal Christina, queen-elect at six in 1632, modified her mother's crown for her own coronation at age 18.

Sicily's Frederick II buried crown with his beloved Constance, 1222. It was found at exhumation in 1781.

Pearl-heavy Crown of Bavarian Queens is in Wittelsbach dynasty's collection—the richest in Europe.

Fashioned for Elizabeth II's 1953 coronation, Britain's Imperial State Crown is set with ancient gems.

seigneuries pushed back their neighbors' boundaries, nibbling province after province, and carved out their own kingdoms. Profiting by the weakness of the Empire of the West and making use of its internal wars and quarrels of succession, these new masters cut themselves off from their theoretical suzerain, the Emperor. They adopted or garnered the title of "king" and had themselves crowned, and for this purpose had crowns and other instruments of coronation created for which they claimed fabulously ancient origins which lent some legitimacy to their power. Little by little the crowns became the pallia of these emergent dynasties, the emblems of embryonic nationalism or at least of a sense of independent identity (above).

In Scotland in the 16th century, for example, James V claimed that the lovely crown he had ordered had been fashioned with fragments of the crown of Robert Bruce, his formidable predecessor. In the 14th century

Russia's first Czar, Ivan the Terrible, used Byzantine style as link to Imperial past.

The Crown of St. Wenceslas of Bohemia (c. 1346) is inlaid with 91 gems and 20 pearls.

Mary Queen of Scots was crowned at nine months; Crown of Scotland probably served as a symbol only.

Whimsical Queen Maria Pia of Savoy had diamond diadem made in 1878. Stars of top row are spring-mounted.

The Crown of St. Stephen, revered in Hungary, may date to 1000. Cross had probably been tilted before 1793.

the King of Bohemia, who was Emperor Charles IV, crowned the gold bust of St. Wenceslas, the pious evangelist and father of Bohemia (Czechoslovakia); made even more venerable by a relic of the Crown of Thorns set inside it, the jewel, known thenceforth as the Crown of St. Wenceslas, became linked to the country's independence. The crown of neighboring Hungary was supposed to have served in the coronation of St. Stephen, the first king. It came to be the pallium of the nation, with its own guards. No one could call himself master of Hungary without having been crowned with it. St. Stephen's Crown has made history in modern times as well. At the end of World War II, while Soviet armies laid siege to Budapest, the crown left in a mysterious special train and was hidden in Austria. Eventually it fell into the hands of the Americans, who locked it up in Fort Knox. It was returned to Hungary in 1978 after long negotiations.

Frederick the Great of Prussia collected snuffboxes; one in his pocket, so it is said, stopped a bullet.

Marie Antoinette's magnificent diamonds, sapphires have passed through three ruling French dynasties.

Emblems of monarchy, the crown jewels of the dynastic "nations" that sprouted like mushrooms over medieval Europe were in turn destroyed by the anti-monarchistic revolutions. Oliver Cromwell's regime had the so-called Crown of St. Edward and other English jewels melted down; the French Revolution was to do the same with the second so-called Crown of Charlemagne. The more pragmatic Bolsheviks at first thought of selling all the crown jewels of Russia—Trotsky had them inventoried for this purpose—but, out of some curious respect for the past they had abolished, they kept certain pieces, not the most valuable, but those most deeply imbued with history.

Royal rush to "closed" crowns

The end of the Middle Ages saw the end of the theoretical preeminence of the Holy Roman Emperor over the kings. Francis I of France declared himself "emperor" in his own realm and had his crown "closed," like Charlemagne's. Once only the Emperor wore a crown topped with arches, symbols of his worldwide domination; kings had to be content with open crowns. Now the kings of Europe hurried to close their own crowns, at least on their coats of arms.

The Renaissance also saw the disappearance of medieval mysticism. It was replaced by the spirit of lucre. Families of bankers emerged to build gigantic fortunes, and pushed the spirit of collection to heretofore unequaled heights. What were their clients, the kings, to do? They became collectors as well.

Until then the crown jewels had consisted primarily of the instruments of coronation, reliquaries and other sacred objects. The silver-gilt reliquary bust of St. Ludmilla (p. 141), for example, was made in the 14th century for Charles IV of Luxembourg, King of Bohemia; she had been martyred in the 10th century for her Christian faith. Traditionally, the bust—with a crown—was brought to witness the coronation of the kings of Bohemia. And a masterpiece of sacred medieval jewelry made of gold and precious stones is the Apostolic Cross (p. 140) carried before the kings of Hungary. A very different precious object is the late-14th-century statue of Charles VI of France, thought to have been ordered for him by his wife, Isabel of Bavaria, at the beginning of their marriage, when they were still deeply in love. Charles is shown in a pious, kneeling position (p. 138). Later, after he had gone mad and Isabel plunged into a life of debauchery, she "sold" France to England at the Treaty of Troyes and publicly admitted that her son, the future Charles VII, was illegitimate. Lost by a woman, the kingdom was soon to be regained by another—Joan of Arc.

From the Renaissance onward, the nations' crown

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Precious object of gold, enamel, gems (c. 1400) portrays Charles VI of France kneeling (left) before Virgin.

jewels were enhanced by collections of various objects of a purely precious nature. First came the precious stones—sapphires, emeralds, rubies. Diamonds, too, had their vogue, especially after the 17th century, when Cardinal Mazarin, a fierce and relentless collector, adopted the modern fashion of cutting them to make them sparkle as much as possible.

Second came the jewelry: men's and women's necklaces, pendants, bracelets, earrings, brooches, diadems. The superb parure of sapphires and diamonds belonging to Queen Marie Antoinette (p. 136) vanished during the French Revolution and mysteriously reappeared, to be bought by Napoleon, who gave it to his wife, the future Empress Josephine. At her death it went to her daughter, Queen Hortense. Ruined by the fall of the Bonapartes, Hortense sold it to Louis Philippe, then Duke of Orléans. Since that time it has been worn by the wives of the successive heads of the House of France and now belongs to the present pretender to the throne, the Count of Paris. It is unique in that it has passed through the hands of three dynasties that ruled France: the Bourbons, the Bonapartes and the Orléans. In 1878, Queen Maria Pia of Savoy, whimsical, spendthrift and stylish, commissioned a diadem of stars set with large diamonds (p. 135). One day she had a Te Deum in the cathedral in Lisbon postponed by half an hour so that sunlight falling through the windows at the right angle would catch her red hair as she entered the sanctuary.

Last came the objects. Jewelers, most of them Italian or German, worked their gold with dazzling skill into the strangest of shapes and covered them with sparkling enamels. They carved ivory, rock crystal, amethyst, topaz, jade, carnelian, agate, heliotrope, chalcedony, jasper, lapis lazuli and amber into cups, statuettes, vases, urns, platters. Most of these masterpieces served no purpose other than to delight the eye. But the goldsmiths also used precious materials to make useful objects: chandeliers, inkwells, mirrors, boxes such as the ornate snuffboxes collected by Prussia's Frederick the Great (p. 136), scissors and so on.

Taken together, these treasures of the Crown were carefully inventoried and given a status—property of the state or property of the Crown (then intrinsically linked). Handed down from ruler to ruler, from generation to generation to the head of the family, they were indivisible and incommunicable. They were the highest gratification of the royal collector, but they also contributed to the ruler's prestige; and, although it generally remained unsaid, they were also something in hand in times of crisis or penury. In principle they were not at anyone's disposal, least of all that of their owner, the king; but the king often did sell or pawn them. The Queen of Castile, Isabella the Catholic, is supposed to have pawned her necklace of balas rubies in order to fund Christopher Columbus' expedition. King Christian IV of Denmark, ruined by the Thirty Years' War, pawned the crown he had ordered with infinite care (p. 134). Thus these jewels became great travelers; crowns were handed from moneylender to moneylender, precious stones from collector to collector. Among the great royal collectors were the Tudors, Hapsburgs, three generations of Danish kings, the Wittelsbachs, Louis XIV—the most dedicated collector in 17th-century Europe—and Russian rulers Elizabeth and Catherine II.

During the 18th century there was a revolution in feminine fashions—from heavy, sumptuously trimmed dresses worn time and time again to light dresses changed often. This fashion had an effect on jewels, including those of the Crown. Respect demanded that

This article is adapted from Prince Michael's latest book, Crown Jewels of Europe, *brought out this month by Harper & Row, publishers of his novel,* Sultana.

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Kings of Hungary were called "Apostolic Kings," had a bejeweled Apostolic Cross borne before them.

the sacred crowns of the Middle Ages be kept, but since they seemed so old-fashioned, the kings took to designing lighter and more elegant ones for each coronation. Everywhere in Europe the diamonds of the crowns, removed after use, were reset according to the latest dictates of fashion. Marie Antoinette sometimes pinned her most beautiful stone in her hair.

It was in a sense the fate of the treasures of kings to excite people's greed and to be dispersed or disappear. In 1671 a daring burglar, Colonel Blood, stole the crown of England from the Tower of London. Rather than let him be executed after his arrest, Charles II, amazed by his boldness, offered him a post in his guard. Even our era, with its ultrasophisticated security systems, is not safe from such hazards. A few years ago bold robbers entered the Louvre in the rush hour and stole from its case the coronation sword of Charles X, the last King of France. The sword, inlaid with 1,576 diamonds, has never been found.

What was not stolen was sometimes dispersed in enormous sales, conducted more for political than financial reasons. In 1887 the Third Republic sold most of the crown jewels of France. Similarly, the Soviets sold many Russian crown jewels in 1927.

Yet other treasures vanished without a trace. Nothing is more mysterious than the whereabouts of the crown jewels of Spain. In the early 19th century, Charles IV, sensing the arrival of the Napoleonic storm, had his beloved collection of clocks walled up in one of the rooms of the Royal Palace. His splendid collection of jewels was hidden in the wall of another room. A servant carefully kept samples of the draperies of both rooms in order to remember which they were. As predicted, Napoleon invaded Spain, then placed his brother Joseph on the throne. In 1814, Charles' son, Ferdinand VII, recovered the throne—and the two samples the faithful servant handed him. Alas! Joseph Bonaparte had changed all the draperies in the palace and no one remembered in which rooms the precious collections had been immured. Faced with the choice of having all the walls of his 360-room palace ripped open or writing off his treasure, Ferdinand opted for the second solution. The story of the walled-up treasure became a legend in which no one believed—until a few decades ago, when plumbers working in the palace are said to have found Charles' clocks. If the clocks were there, then the jewels, too, must be hidden somewhere. But how to find them? No one has come up with an answer. Perhaps the crown jewels of Spain have not reached the end of their adventures after all.

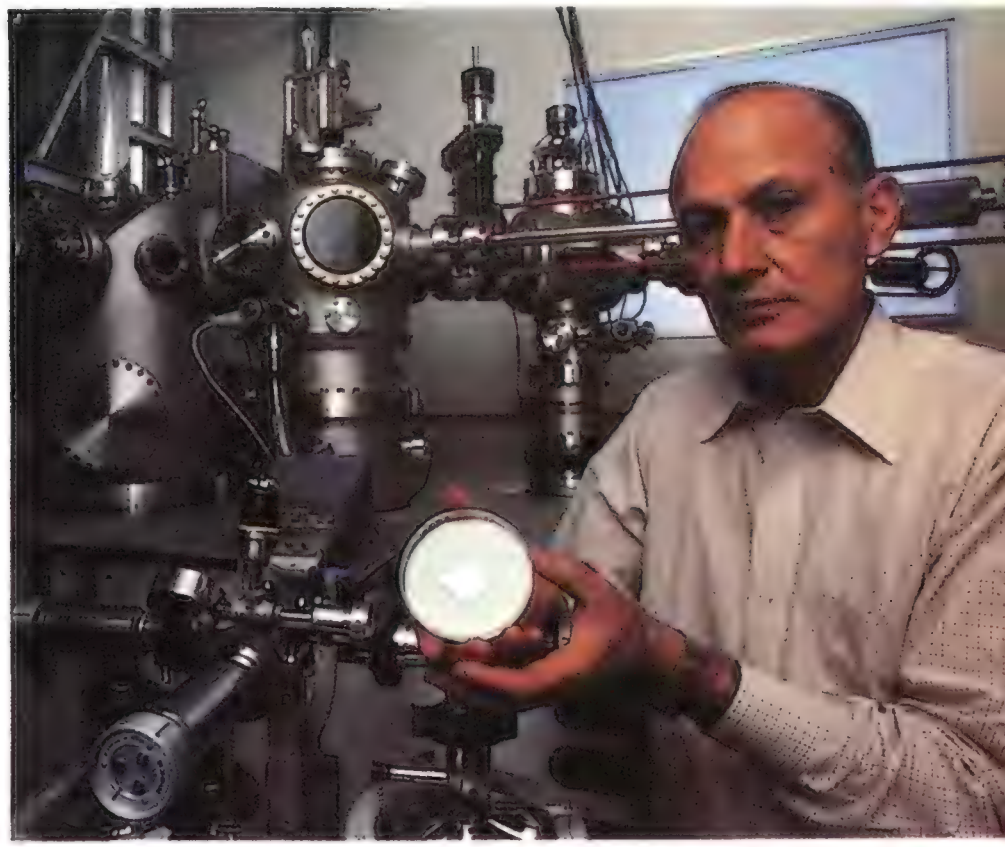
Silver-gilt reliquary bust was ordered by Charles IV to honor the martyred Duchess of Bohemia, Ludmilla.

A tiny gallium-arsenide laser, along with wire lead extending upward, occupies the upper right corner of gold-plated block. In future, fiber optics will use such a laser with electronic switchboard on same chip.

By Leo Janos

Caltech researcher sees his invention making Japan rich

Amnon Yariv, who created the revolutionary microlaser chip in his lab, tried to interest U.S. companies in developing it, but couldn't



Amnon Yariv holds wafer of crystal used in his lasers, grown in machine at left. Chips are cut from wafer.

Dozens of times over the past ten years, Amnon Yariv wished he could appoint himself a czar with dictatorial powers over the strategic planning and budgeting of America's optoelectronics industry. At stake, he was convinced, was U.S. leadership in the race against Japanese competitors to provide the technology as the world converted its communications systems from electricity through copper wires to light beams streaming through hair-thin glass fibers. The reason for the competition is obvious. A single glass fiber the width of a thread in a spider's web can carry as much information as hundreds of copper-wire circuits. High-capacity communications networks using laser bursts of photons—light—in glass fibers can transmit many times more information than conventional electrical signals. Traveling as light pulses, a thousand telephone conversations can be carried simultaneously through one tiny fiber of glass. Even television and FM radio signals are being carried through fibers in experimental systems.

Future generations of computers using optical systems could carry information at thousands of times the rate of systems now in use, and this may be necessary with the supercomputers now being developed. Tolstoy's *War and Peace* could be transmitted by one library computer to another in approximately one one-hundredth of a second!

The signals carried by these fibers are generated by lasers. There is so little signal loss in the fibers now available that the laser requires boosting from one-tenth to one-twentieth as often as conventional electrical signals. When current is applied to a laser crystal no larger than a flyspeck, some three milliwatts of light —so concentrated that it is brighter than the sun's surface—are produced at a precise wavelength. The laser beam can be switched on and off billions of times a second—each on-off cycle representing the transmission of individual "bits" of information.

In the early '70s Yariv became convinced that the technology for combining miniature lasers and transistors on a single semiconductor chip held the key to dominating a newly emerging market for communication systems based on optical fibers. Only the big industrial research and development labs possessed the skilled scientific manpower and sophisticated equipment to create such an integrated laser chip. Until then, experimental and relatively primitive microlasers operated from separate "power packs," wired to chips that regulated the laser's current and frequency. Such separations, Yariv argued, were too inefficient and slow for the lightning speed required in fiber-optics communications.

Yariv is not an impractical futurist. His credentials as an expert on lasers and optoelectronics are impeccable. His research lab at the California Institute of Technology, where he is professor of applied physics

Leo Janos is a California-based free-lance writer whose most recent article, about how bacteria move, was in the September 1983 SMITHSONIAN.

Photographs by Christopher Springmann

ORTEL Corporation

Yariv's chip, seen through microscope, carries laser (horizontal lines, bottom) and two sets of transistors.

Yariv and his student Stephen Smith view crystal growing in molecular beam, in Caltech lab machine.

and electrical engineering, is regarded as perhaps the best pure research facility of its kind.

"I spent a good deal of time some ten years ago making speeches at symposiums or buttonholing executives at conferences," he said recently. "My message was that U.S. electronics could jump out ahead of the Japanese in a significant way. There were practically no Japanese research papers on optoelectronics, and we had caught them while they were preoccupied making pocket calculators, videotape recorders and cameras. Optoelectronics could be an even bigger prize. Unfortunately, however, none of the big American companies were very interested."

In the 1960s, when the Israeli-born Yariv became a citizen and was employed as a laser researcher at Bell Laboratories in New Jersey, the Japanese electronics industry adroitly and aggressively pioneered development of solid-state transistors that replaced vacuum tubes in everything from radio and television sets to the most sophisticated commercial and military electronic hardware.

"That's the way we used to be," Yariv argues. "They just tore a page out of our own manuals." He became firmly convinced that American scientific research—unrivaled in the world—was making Japan rich. "They manufacture our inventions and discoveries," he says with a sigh.

To his colleagues in industry, Yariv is a controversial figure, a maverick whose research is brilliant but whose beliefs were too far ahead of the times. Yariv's counterparts in industrial research labs rejected his pleas for a more intensive effort in this field. They had only begun to prove the separate optical and electronic components for fiber-optic systems, the "first generation" technology. They felt it would be premature to develop chips incorporating both of these components, a more advanced "second generation" technology.

At the time, industry saw no advantage in developing the technology to combine electronic and optic components on the same chip, when they could do as well without. Today, there are more than a hundred such systems in the United States, using separate optical and electronic components, and more than 124,000 miles of fibers carrying telephone signals.

To Yariv, however, the integration of the laser and the electronics on a single chip seemed commercially inevitable. He compares the leap to this level of sophistication with the leap from transistors and other components soldered together by hand with wires on circuit boards to the photochemical processes that create silicon chips used in today's computers.

"That is why you can buy for a few hundred dollars a pocket calculator that has as much computing power as a computer that filled several rooms in the 1950s,"

The device produces thin layers of gallium arsenide and similar materials to create light-emitting chips.

he says. And he warns that today's microlaser technology will suddenly seem obsolete when the new, integrated technology is made available.

But Yariv long ago gave up his proselytizing and decided to develop an integrated laser himself. He decided to use his own students and the meager resources of his Caltech lab, plus small grants from an "enlightened" Office of Naval Research and National Science Foundation. "I became involved as a last resort," he says. "For eight years, we worked alone. Not any of the American companies showed any interest in our project, but, from the first, the Japanese began to monitor us closely."

The laser that Yariv and his student colleagues at Caltech decided to build was revolutionary. It would be a self-contained laser with microelectronic circuits for monitoring, stabilizing and amplifying its light pulses all on the same chip. Unlike any laser previously produced, this one would carry its own electronic switchboard. But to design such a laser presented formidable problems.

By the time the Caltech project began in 1972, American industry had already made an enormous investment in silicon-chip technology. Silicon integrated circuits were largely responsible for America's surging computer hardware and software industries in the sprawling industrial complex south of San Francisco, appropriately nicknamed "Silicon Valley." Silicon was cheap, abundant (it is found in sand) and easy to work with. But to Yariv, it was a DC-3 in the age of jets. Not only were silicon's properties woefully slow for the needs of optoelectronic circuits, but it was also unable to emit light. "The biggest need facing us," Yariv recalls, "was to find a 'mother crystal'—a material compatible with both optics and electronics."

"At first, we didn't know what was important"

While at the Bell Labs years before, Yariv had done research on the experimental gallium-arsenide lasers that showed promise as the telephone-conversation carriers of the future. Crude lasers of this type were developed at MIT's Lincoln Labs, General Electric and IBM as early as 1962, and Bell's current systems are gallium-arsenide lasers, along with silicon chips for their electronic components. Yariv was impressed by gallium arsenide's inherent speed. Electrons can move through it four to five times faster than in silicon, while consuming less power, but most important, gallium arsenide can also be used for electronic circuitry so one could dream of "growing" the laser plus associated electronics on a single crystal (opposite).

From the outset, Yariv insisted that his university lab would maintain its scholarly and rigorously analytic approach in developing the lasers. Student researchers methodically stripped gallium arsenide of its mysteries, subjecting its structure and properties to intensive analysis that became grist for doctoral theses.

Two generations of graduate students participated—a total of about 20—before the first integrated chip was successfully demonstrated three years ago. "We tackled very complex problems. For example, how to insulate the electronics from the laser to avoid problems of overheating, or possible short-circuits caused by integration on a tiny, ultrathin chip," a former student named Hank Blauvelt recently remarked. "The students developed the basic analytic and experimental tools. At first we didn't know what was really important and what wasn't. In an academic environment mistakes are welcomed as part of the learning process. But we learned fast and tried hard not to repeat any."

Yariv's lab might have been embarked on a truly momentous project, but to a layman the place looked as colorful as a bag of fog. It most resembled the workbench in a television-repair store—only much neater and quieter. Students worked mostly alone, occasionally conferring with one another in the incomprehen-

At Yariv's lab, "window" in the foreground corrects distortions in the transmitted words, "Cal Tech."

sible language of electrical engineers, surrounded by other monitoring devices. An hour might be spent turning on and off certain switches and recording the results. As one student put it: "It's hard to tell my girl friend why what I'm doing is so exciting—for me." One takes it on faith that the work is significant. One takes it on faith that microlasers exist, for they are too small to be seen without a microscope, and their beams are invisible without an infrared detector.

But on a mild winter afternoon three years ago, there was plenty of excitement and drama in Yariv's lab when a doctoral candidate named Israel Ury tested Caltech's and the world's first prototype integrated laser-transistor circuit, the product of eight years of study and experiment. "Everyone crowded in to see how this amazing 'two-headed baby' would work," Ury says. "We applied the current and it worked perfectly. Everyone congratulated one another and then we went home." Caltech issued a press release announcing the world's first integrated optoelectronic circuit.

American industry reacted to this news with indifference, but, perhaps coincidentally, only a few months later the Japanese electronics industry announced an investment of $100 million in integrated-optoelectronics development. So determined are they to lead the world in this fledgling field that their five largest electronics firms have taken the significant step of cooperating jointly in research and development.

"Caltech has produced the most advanced lasers made in the United States," Yariv said shortly after. "We have successfully merged the two main actors in optics and electronics—the laser and transistor. My students worked at the cutting edge of a new technology, forced to solve problems never before attempted in semiconductor physics, quantum electronics and optics. And the result of all of this is that the Japanese will become leaders in the field. The Americans have already lost the race."

"They've taken our work and are running with it"

Yariv continued: "We undertook a project that was properly the province of a commercial research-and-development lab. Now, as an American professor at an American university, I feel as if I've been performing vital R&D for the Japanese. They've taken our work and they are running with it. Only now, some five years after the Japanese, are American electronic companies starting R&D in this field."

All of Yariv's graduates are rigorously pursued by American industry, receiving offers approaching $50,000 to start. Ironically, one who got away and returned to his native land was Michiharu Nakamura, who worked on the early stages of the Caltech laser for his doctorate and who now is Japan's principal laser

THE CASE OF
·THE·
'AON BRAICH'

One rainy evening, a man with Gaelic on his breath delivered to my door a case of Glenfiddich. "Aon Braich," he murmured. No one here by that name, I mused. When I looked up, he had disappeared.

Upon cracking the cache of Glenfiddich with my Scottish Rites hatchet, I found each bottle of this distinctive malt whisky to be of triangular shape. Evidently, there were more sides to this story still.

Examining the label, I detected a most intriguing clue: Glenfiddich is Gaelic for 'Valley of the Deer.' Had this peculiar charade been nothing more than a cleverly staged stag party invitation?

A sudden revelation struck me like a belt from Savile Row. Perhaps the peat-stained pages of MacTurf's 'Scotch On The Lochs' would hold the explanation. I reached for my volume – but the book was gone!

It was then my friend MacIntosh rang. "Aon Braich!" he intoned. That strange name again! "I'd have returned the book myself, but with this downpour..." Then I saw my MacTurf tucked 'midst the malts.

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expert heading Hitachi's optoelectronic program. Hitachi has been so successful in developing gallium-arsenide lasers that it has been selling some of them to Bell Labs. According to a former director of an optoelectronics lab at Bell, Hitachi helped Bell to build an advanced version of the device Bell and others pioneered in the 1960s.

By contrast, the United States has more scientists at work in this field, but unlike the Japanese they are not working jointly, and if they did they might have antitrust problems. Instead, they are scattered among the various commercial labs, with the largest number of them employed on defense projects that are only marginally relevant to commercial industry's needs.

"Defense research is usually kept secret, for obvious reasons," Yariv remarks, "and while many of our best people are involved in producing electronic devices for missiles, their Japanese counterparts are busy designing Betamaxes and Minoltas. It is impossible to assess the enormous price the United States pays for such an emphasis on military hardware at the expense of consumer and industrial product development."

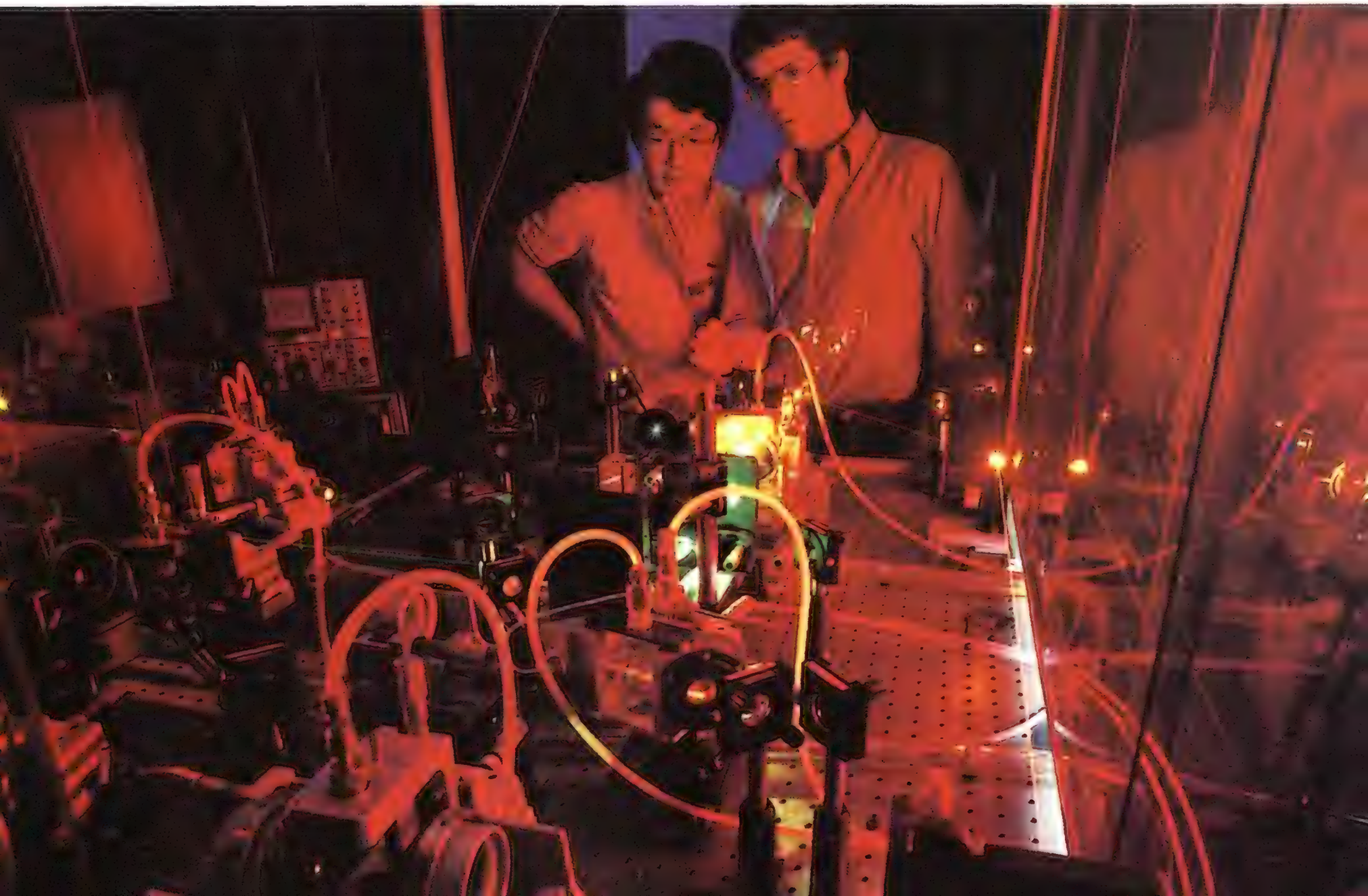
The Caltech research program spurred interest in gallium arsenide, which is now being widely considered for important applications in radar- and missile-control circuitry, very fast computers and chips linked to optical fibers.

To date, Professor Yariv and his students have acquired patents on 12 different types of integrated lasers and are now focusing their attention on extremely high-speed lasers and the physics of ultrashort pulse bursts (below), and on methods of reducing errors in signal transmission (p. 146). Lasers are being fabricated with radical new structures and properties. "At the moment," Yariv admits, "research is ahead of practical application—especially in this country."

And Yariv's Caltech lab remains unrivaled. Although most of the equipment used by his student researchers is not as sophisticated or state-of-the-art as that used in the big commercial labs, the quality of significant research is likely to remain undiminished.

"After Caltech," says a former Yariv student, "any place else, either in academia or in industry, seems dull and unimaginative. I'm just starting my career, but with a sinking feeling that I've already been on the mountaintop."

Students Joel Paslaski, right, and Yoshikazu Hori watch apparatus generating ultrashort laser pulses. Laser beam at the right is composed of many short pulses, each about one trillionth of a second long.



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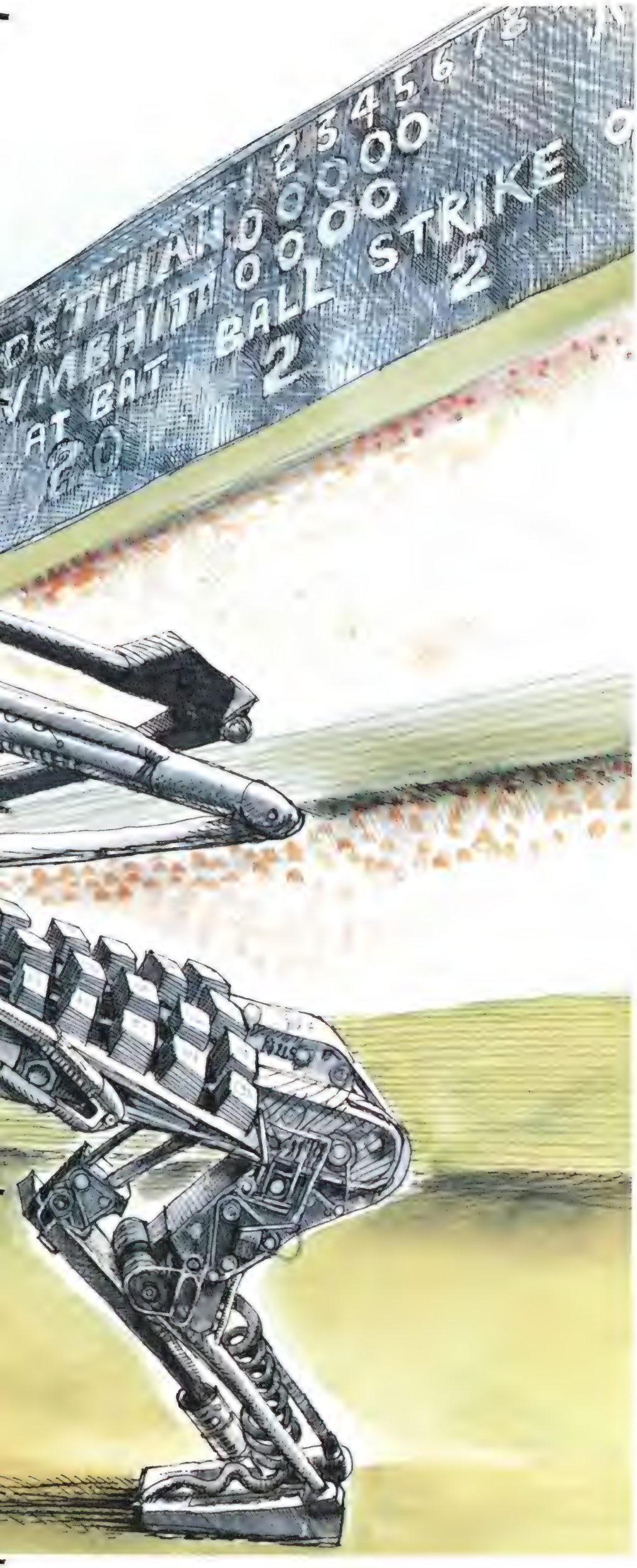

By Richard Wolkomir

Programmed to win, sporty computers charge onto the field

A deluge of new digital data is making baseball and other big-time sports more complicated and more interesting for fans and players alike

On a hot Sunday afternoon last June, the Boston Red Sox were playing at home in Fenway Park against the Baltimore Orioles, one of their perennial archrivals for a division championship and a possible shot at the World Series—and the fans were *booing*. In the eighth inning, with the home team trailing the Baltimore Orioles by one run, Red Sox manager Ralph Houk had just sent in young Reid Nichols to pinch hit for the mighty Carl Yastrzemski. It was as if Agamemnon, on the beach at Troy, had ordered Achilles to sit in the boat and given his sword to a stripling from Corinth. After all, "Yaz," 23 years a Red Sox hero, had a star's lifetime batting average of .286 and that afternoon he had hit a double and a single. But soon the boos became cheers: Nichols laid down a bloopy bunt and sped to first base. Two hitters later, he sprinted home to tie the game, which the Red Sox ultimately won.

According to Boston's publicity director, Dick Bresciani, who oversees the Red Sox's statistics, Ralph Houk was making "a percentage move." He knew that, despite Yaz's impressive batting average, the situation called for a sacrifice bunt. He also knew that Nichols was a better bunter than Yaz, and a faster runner on the base path. Finally, he knew that Yaz's bunt-

Just about the only thing computers haven't done at the ball park is argue with the ump, at least so far.

Illustrations by John Huehnergarth

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To increase home-run production, the Chicago White Sox consulted their computer's printouts last year—and then moved home plate forward eight feet.

ing chances were especially poor against this particular Orioles pitcher. "We're now gathering what we call 'intelligence statistics,'" said Bresciani. "They go way beyond the old basics, like batting averages."

Call it "computerball." That is what sportswriters have dubbed the data deluge. In America, professional team sports have long been a preserve for contemporary Pythagoreans, who believe that the essence of all things is numbers. But in the past ten years, and particularly since the introduction of computers in the past five years, the sports statisticians have truly come into their own. Once dismissed as "number nuts," they are fast becoming the games' Einsteins, generating all sorts of new formulas for expressing sports relativity. Their work is adding digital zest to the games for fans. It is even changing the way the games are played.

At the end of the 1982 season, for instance, the Chicago White Sox consulted their computer's printouts like disciples pondering a guru's sutras. How far and in what direction were the Sox hitting against the various opposing pitchers? After interpreting the Holy Data, they moved Comiskey Park's home plate forward eight feet. Their computer said that would give them more home-park home runs.

The Oakland A's also have a computer, and so do the New York Yankees, with other franchises sure to follow. While these teams maintain Pentagonlike secrecy about exactly how they use their gadgets, a Chicago coach recently revealed to the press the machine's determination that a certain left-handed hitter for the Milwaukee Brewers almost inevitably made contact if a left-handed pitcher threw him a breaking ball. Such tidbits can win ball games. So

A frequent contributor, Richard Wolkomir has written recently about entrepreneurs and laboratory mice.

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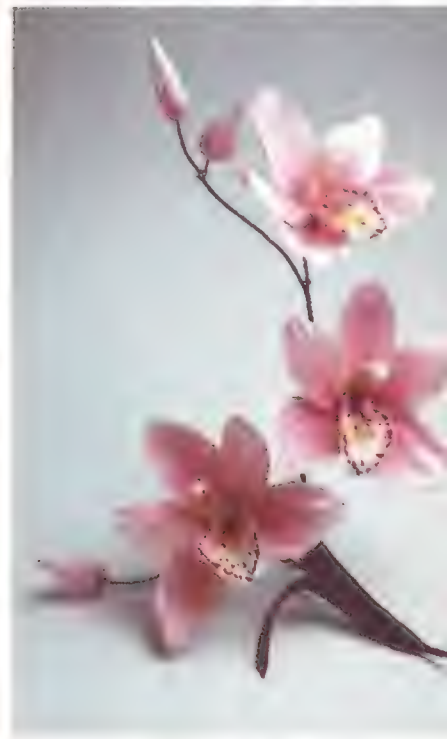

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can other statistics that the machines turn out: performance of each of a team's batters in particular parks, in night games, against particular pitchers; how well they bat with runners on base, in various innings and at various strike-ball counts against them. Other "intelligence statistics" range from teams' base-stealing aptitudes against particular pitcher-catcher combinations to their propensity for hitting into double plays on grass versus artificial turf.

Consider a May 19, 1983, game between the Oakland A's and the Detroit Tigers. After meditating with his computer, Oakland manager Steve Boros cancelled his plan to drop outfielder Dwayne Murphy from fourth to fifth in the batting order. In the fifth inning, Murphy came to bat with the bases loaded. He hit a home run, winning the game.

In some other sports, particularly football, the high-tech revolution is even further along, with 11 of the 28 teams in the National Football League already computerized. And the statistics flowing from these machines can give teams an edge.

Hank Stram, former head coach of the Kansas City Chiefs, predicts that, increasingly, teams will feed into computers opposing teams' plays over their preceding three or four games, crunching the data together to predict their likeliest moves in particular situations. "Within the next ten years you may see each team with a computer terminal on the sidelines during a game, operated by an assistant coach whose job it will be to provide constant data for coaches on the field," Stram suggests.

The statisticians' astonishing new powers to manipulate data electronically is even having an impact on who plays for what teams. In salary negotiations now, both players and managers routinely bring in statisticians to help pinpoint a player's value to the team. In basketball, a firm called National Economic Research Associates, headquartered in Manhattan's

"Intelligence" statistics manipulated in computers help managers outsmart one another, which is why teams are secretive about how they use their gadgets.

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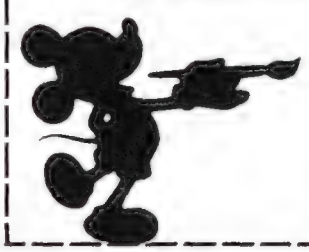

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World Trade Center, has been using a big Hewlett-Packard computer to matchmake between National Basketball Association teams and free-agent players seeking new contracts.

Whatever its impact on the teams, the statistics explosion is providing fans with the kind of sophisticated analyses once available only to macroeconomists. No sports fans are hungrier for numbers—or more surfeited by them—than the lovers of baseball. The main reason why our national pastime generates so many statistics is that it is a game of one-on-one contests—between a batter and a pitcher, a hitter and a fielder or a runner and a fielder. Data on these contests have been accumulating in newspaper box scores for 137 years now. Endlessly mulled and interpreted, these records are the game's Holy Scriptures. As the noted Harvard University paleontologist Stephen Jay Gould has put it, "Baseball aficionados wallow in statistics, a sensible obsession that outsiders grasp with difficulty and ridicule often."

The Elias Sports Bureau in Manhattan is the official compiler of statistics for baseball's National League. Elias supplies data to the news media and to management for negotiating contracts. It also provides ABC television with data for its baseball and football broadcasts. Daily, a river of numbers streams through the company's Fifth Avenue offices.

"You don't have to be an astrophysicist to be in this business," says Elias' president, Seymour Siwoff. Perhaps not. But you must be a self-made PhD in such esoterica as: Who was the 1960 World Series batting champion? "Mickey Mantle, of the—you know—New York Yankees, hitting .400 for the series—you're welcome," says Siwoff, eyes blinking intently behind his thick glasses as he puts down the telephone.

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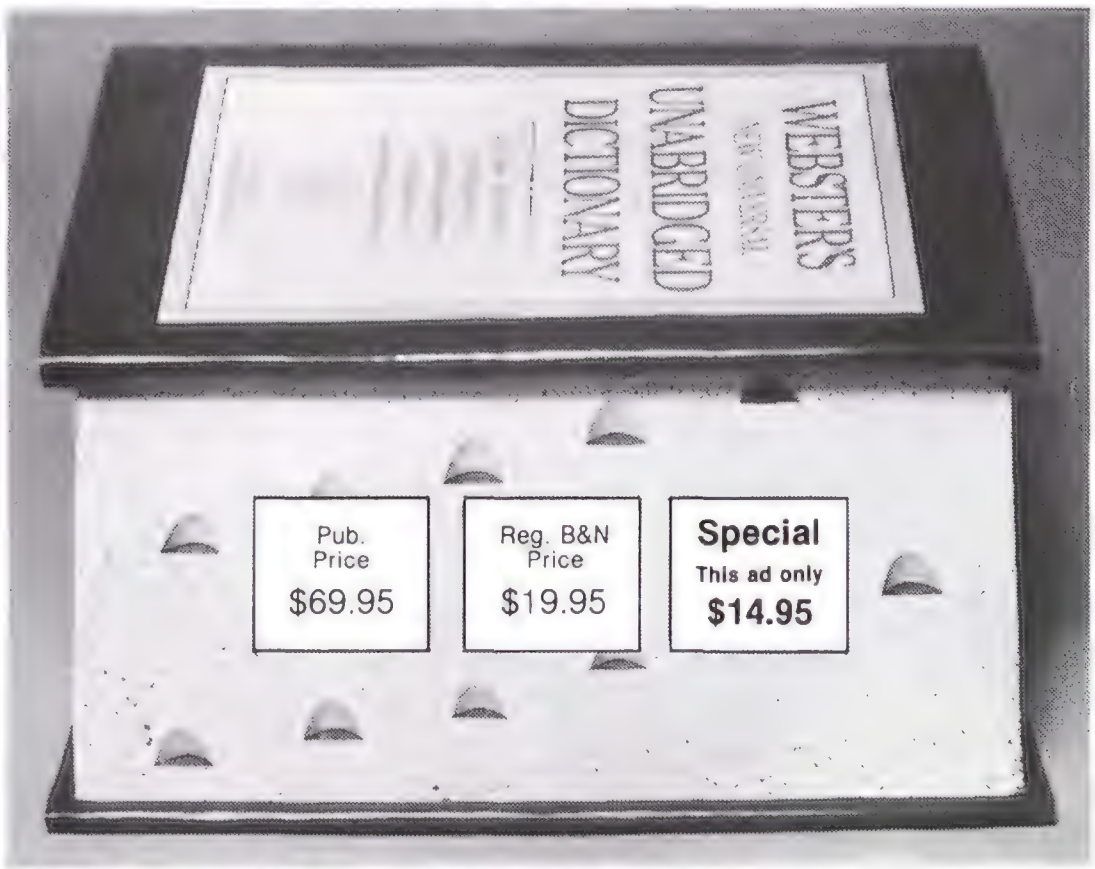

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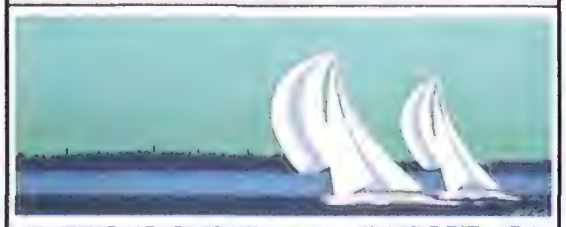

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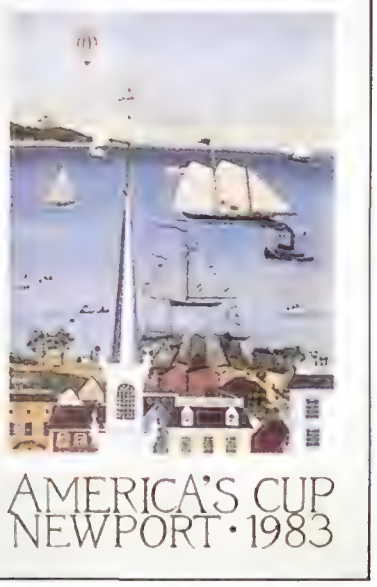

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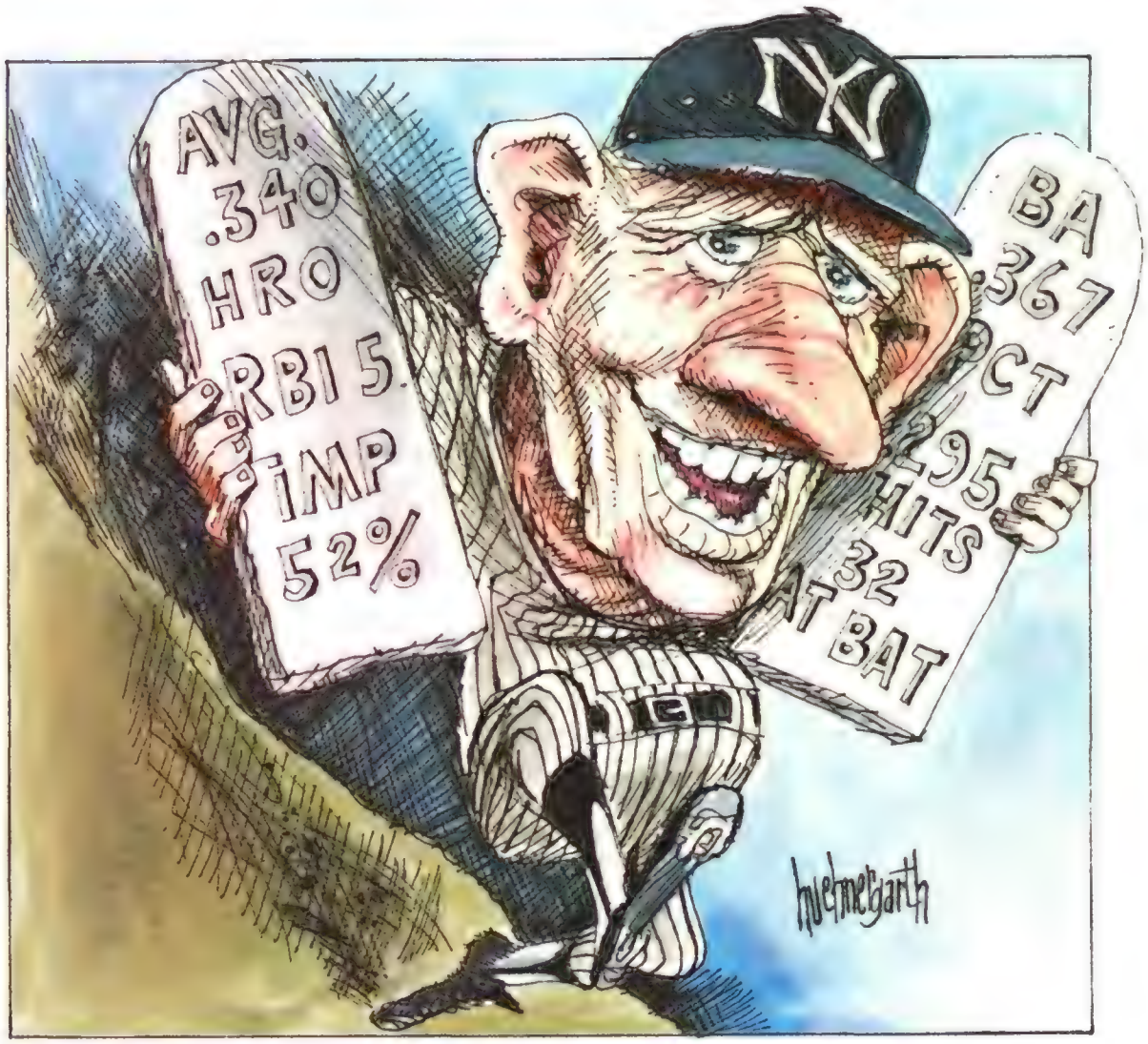
The Price Waterhouse of sports is not averse to a bit of innovation. In 1977, Steve Hirdt decided that baseball was giving insufficient emphasis to its clutch hitters, the players who consistently belt in hits when their teams need them most. So Hirdt began tracking which batters had the most hits when their team had runners in scoring position on second and third base. One of his most surprising discoveries: Carl Yastrzemski, the power-hitting hero of the Boston Red Sox, was not a particularly good clutch hitter during the 1979 season. That revelation sparked an uproar. "You'd think I'd defaced the *Pietà*," says Hirdt.

As might be expected, Hirdt's new wrinkle makes some players look better than their batting averages would otherwise indicate, and it makes others look worse. Hot-hitting Hubie Brooks, the New York Mets' third baseman, has a career batting average of .292 with no one on base, but his clutch hitting average is a low .258. Boston catcher Gary Allenson, on the other hand, has hit a hefty .301 with runners on second and third base during his four-year career, but his overall batting average is only .223. The California Angel's superb first baseman, Rod Carew, has been unfairly maligned as a weak clutch hitter. Actually, his clutch-hitting average has hovered around .350 over the past six years or so.

Faced with so many numbers to decipher, a few fans may echo former



New York Yankee manager Casey Stengel liked to say: "You could look it up!" You still can. Baseball's voluminous "stats" are the game's Holy Scriptures.

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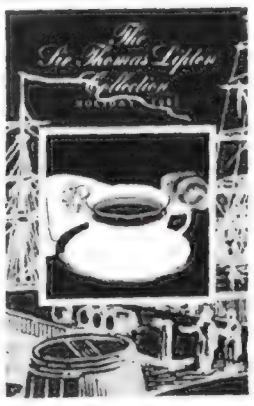

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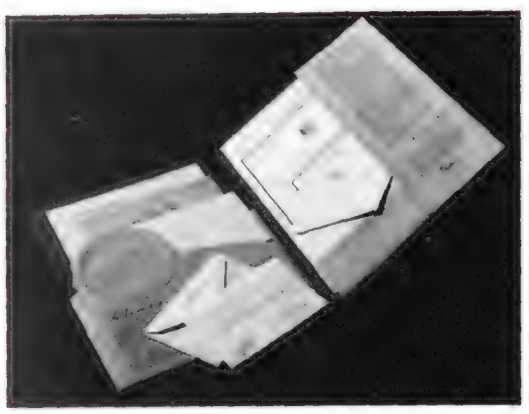

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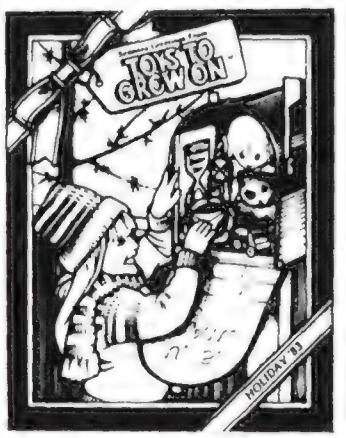

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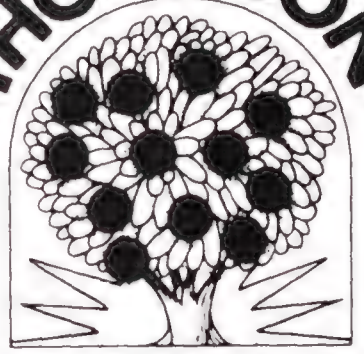

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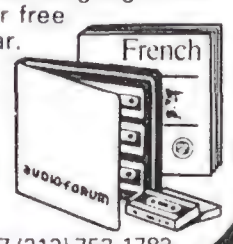

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To raise his batting average, Phillies' Richie Ashburn took bat to bed.

California Angels manager Gene Mauch's cry from the heart: "We've got too damn many stats in baseball now!" For these followers of the game, baseball is still a branch of the humanities. It is true (so far, at least) that none of the new computers has stormed out of a dugout, throwing its cap in the dirt, stamping on it and explaining to an umpire the benefits of bifocals. Clearly, however, those who venerate statistics are calling the shots these days.

The high priests of numbers are the 3,200 members of the Society for American Baseball Research. And the archdruid of them all is surely Bill James, of Winchester, Kansas, who annually produces a prophetic work called the *Bill James Baseball Abstract* and who cheerfully proclaims, "I am an eccentric."

Eccentric or not, James only recently began using a computer himself, and he is still trying to get it to work. Nevertheless, using just a pencil, he long ago began putting the game through a Pythagorean wringer. James has given much thought, for

Sleep Sheep

We may have found a way to improve your sleep forever.

New Zealanders discovered that sleeping under sheep's wool induced sleep.

The story we are about to tell you may seem rather incredible. And indeed it is. But if you'll have an open mind, what you will learn may indeed change your life.

There is a new product manufactured in New Zealand that is selling very well. It's called the Woolrest—a bed pad made of thick wool. You simply place it over your mattress and then cover it with your bottom sheet as you normally do when you make your bed.

SLEEP INDUCING

Sheep's wool has always had an outstanding reputation for keeping you warm in winter and cool in summer. That is why wool seat covers are so popular. But wool has another property known by New Zealanders for many years. Namely—wool induces sleep.

In New Zealand, for example, a way to cure insomnia was to cover yourself with a sheepskin rug. For some very unscientific reason, the hypnotic quality of the wool encouraged sleep. Counting sheep was another technique that was often recommended. But it was the development of the Woolrest bed pad that suddenly turned an old wive's tale into fact.

DIFFERENT EXPERIENCE

Sleeping on a Woolrest is a different sleeping experience. Whether you sleep on a hard or soft mattress, the Woolrest apparently radiates a feeling of comfort and relaxation from the wool fibers which mold, massage, and conform to your entire body.

Scientific tests conducted by Dr. Peter Dickson of Ohio State University proved that the Woolrest pad indeed helped induce sleep. Testimonials from people who owned them clearly demonstrated that Woolrest not only induced sleep but also provided great relief for backaches, arthritis, and rheumatism. Its natural fibers tend to alleviate the pain and pressure caused by these illnesses and thus make sleep come easier and deeper.

Frank Thornton, a Seattle Washington dental technician, had trouble sleeping for six years. He purchased a Woolrest pad and has been able to sleep through the entire night practically every night. According to Thornton, "I felt a sensation of buoyancy from the Woolrest. I have read in literature that a person sleeps more restfully with natural fibers surrounding their body." Thornton has already purchased seven Woolrest pads for his entire family.

There are hundreds of other testimonials we could mention from the thousands who have purchased them, but one thing is clear. Using a Woolrest pad you know that the rest of your life will be spent sleeping comfortably, with a minimum amount of sleeplessness. Certainly, there will be nights when it will be difficult to go to sleep. But with the Woolrest those nights will be fewer, shorter and without the tradeoff of taking sleep-inducing drugs.

WARM IN WINTER

In the winter the Woolrest holds your body heat and thus keeps you warmer. You'd expect that. But in summer it keeps you cooler through a process of moisture absorption by absorbing up to one-third of its weight in moisture to keep your body cool and dry.

Will the Woolrest work for you? We're willing to prove it with no risk on your part. Order one for a 45-day sleep test. When you receive it, closely examine the surface. Feel the thick pure woven pile of natural New Zealand wool. Place it on your bed and then cover the pad with your regular bottom bed sheet—either fitted or plain.

JUST A FEW DAYS

That night go to sleep on it. But don't judge the effectiveness until you've slept on it for at least a full month. You should actually notice the difference in just a few days, but after a month you'll turn from being skeptical like we were, to a real enthusiastic believer. If not, we'll understand. After all it may not work for everybody. Just return it within the 45-day sleep trial and you'll receive a prompt and courteous refund including the $4 delivery charge. The Woolrest washes easily in your washing machine and has a limited five-year warranty. Complete instructions come with each pad. Sleep on a Woolrest and experience what we mean at no risk or obligation. Order one, today.

To order, credit card holders call toll free and ask for product by number below or send check plus $4 delivery for each pad ordered.

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The New Zealand wool used exclusively in the Woolrest could be a major reason for its effectiveness. Here's why.

Most sheep are raised in countries where temperature extremes cause their wool fibers to become brittle, rigid and often cracked at the ends. In Australia sheep are often raised in the dusty outback where temperature and rainfall can vary greatly.

In New Zealand however, the sheep enjoy a year-round temperate climate and graze in lush green pastures. Their wool fibers are thick and vibrant with good shape retention .

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The Woolrest uses only the best New Zealand wool. The fibers are actually woven onto a pure wool blanket base and thoroughly washed and tufted.

We have mentioned the importance of New Zealand wool for good reason. Just as there are several grades of sheepskin seat covers, we suspect eventually there will be several grades of wool bed pads. None will ever compare to the wool used in the Woolrest.

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instance, to how a team's home ball park affects its game. As just one example of how he can deduce metaphysical overtones from a park's configuration, consider his theory that "the cliquishness of the Boston Red Sox, their surliness and impatience with the press" is "the Curse of Fenway." It is a curse, he says, based on statistics: last year, the Red Sox collective batting average was .294 in Fenway, .255 on the road. The park's dimensions, says James, increase doubles by more than 30 percent and increase home runs up to 30 percent for right-handers, less for left-handers. The park hurts Red Sox pitchers less than it helps Red Sox batters. But the overall effect is gloom.

"Fenway makes ballplayers look like better hitters than they are," says James. "That inflates egos. Inflated egos cause resentment, in particular among those not favored by the park; the team divides into clusters of the favored and the ill-favored."

Sometimes statistics *deflate* egos—and bank accounts, too. A rising earned-run average or a dropping

St. Louis Cardinal Ron Hunt was struck by 243 pitched balls—a record.

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Statistician feeds numbers to a TV announcer: "Our secret weapon."

batting average can cost a pitcher or hitter thousands of dollars on his next contract, or even his position on the team. Author George Plimpton has reported that one New York Giants player, Benny Kauff, was so convinced that his slumps were caused by tired bats that he rested them. Richie Ashburn, of the Philadelphia Phillies, once tried to turn the numbers around when he was in a slump by taking his bat to bed with him. "I wanted to know my bat a little better, and it me," he explained.

When Cincinnati Reds shortstop Dave Concepcion was in a bad slump in 1976, he jokingly crawled into a clothesdryer in the team's dressing room, announcing: "Maybe this will get me hot!" Someone started the dryer and Concepcion went for a spin. That day, he got multiple hits. After that, teammates reported, it was hard to keep him out of the dryer.

One of the more bizarre baseball statistics is the number of times batters get a free trip to first base after being hit by a pitched ball. The long-time record holder is Ron Hunt,

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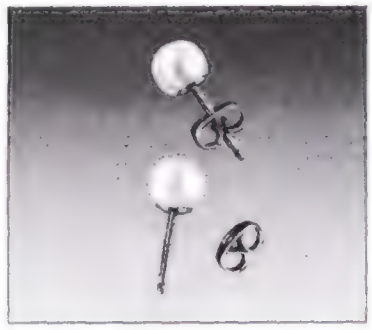

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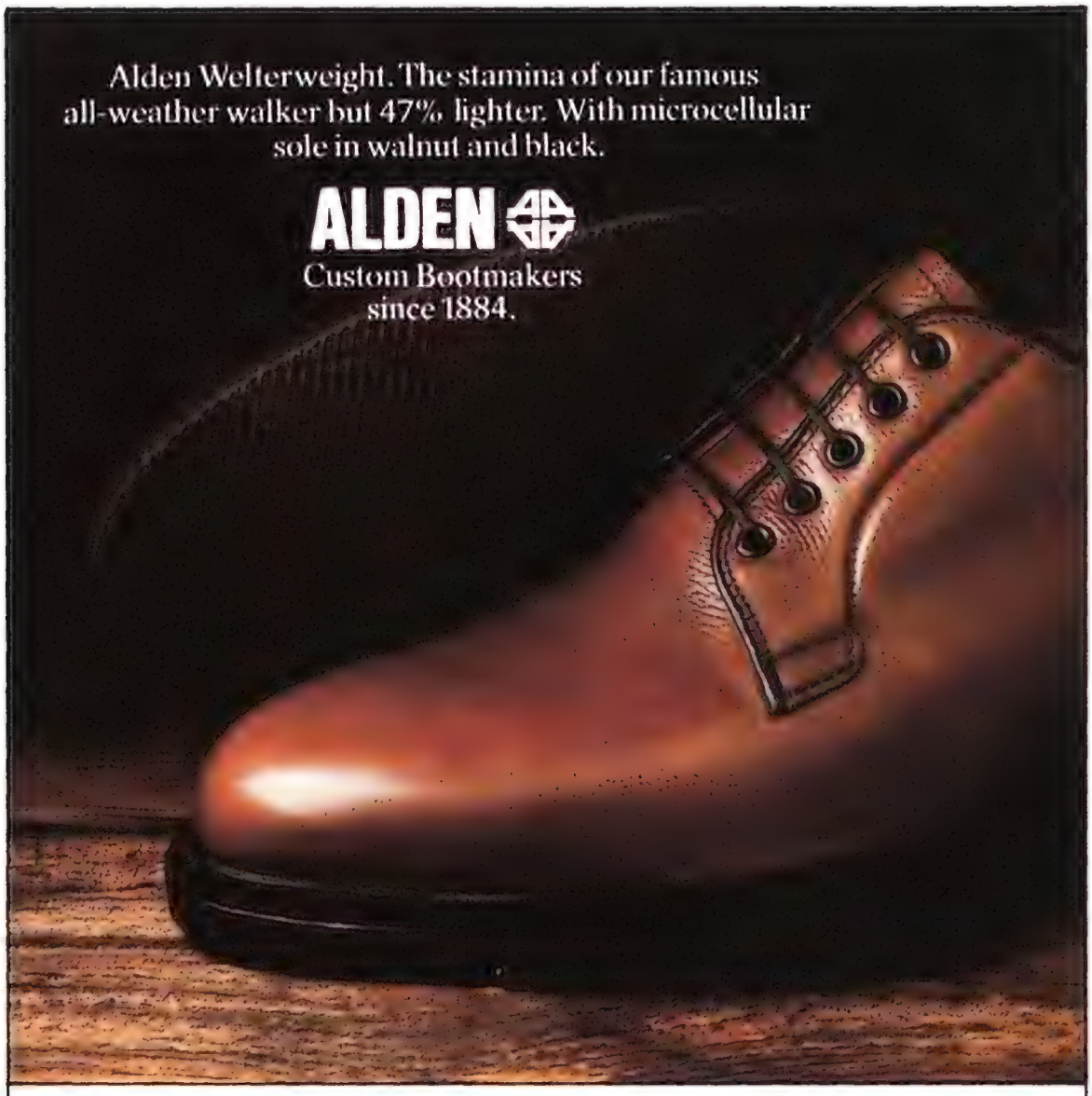

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formerly of the St. Louis Cardinals and New York Mets, who was struck by 243 pitches in 12 years. "Some people give their bodies to science," Hunt once explained. "I give mine to baseball instead."

According to political columnist George Will, such arcana as the most-hit player satisfy a deep psychological need: "Baseball statistics gave many of us our first sense of mastery, our first (and for some of us our last) sense of what it feels like to really understand something, and to know more about something than our parents do."

But to the average fan watching a game on television, statistics are simply a way to better understand the drama being played out on the field. The Greek chorus commenting on the action is the network's announcing team. Also in the TV booth, however, is someone the viewers never see—the statistician. On NBC's Saturday broadcasts, the invisible man in the TV booth with announcers Vin Scully and Joe Garagiola is Steve Danz. "This is our secret weapon," says Scully, pointing a finger at Danz

For broadcasts, statistical graphics are generated by a computer whiz in a van.

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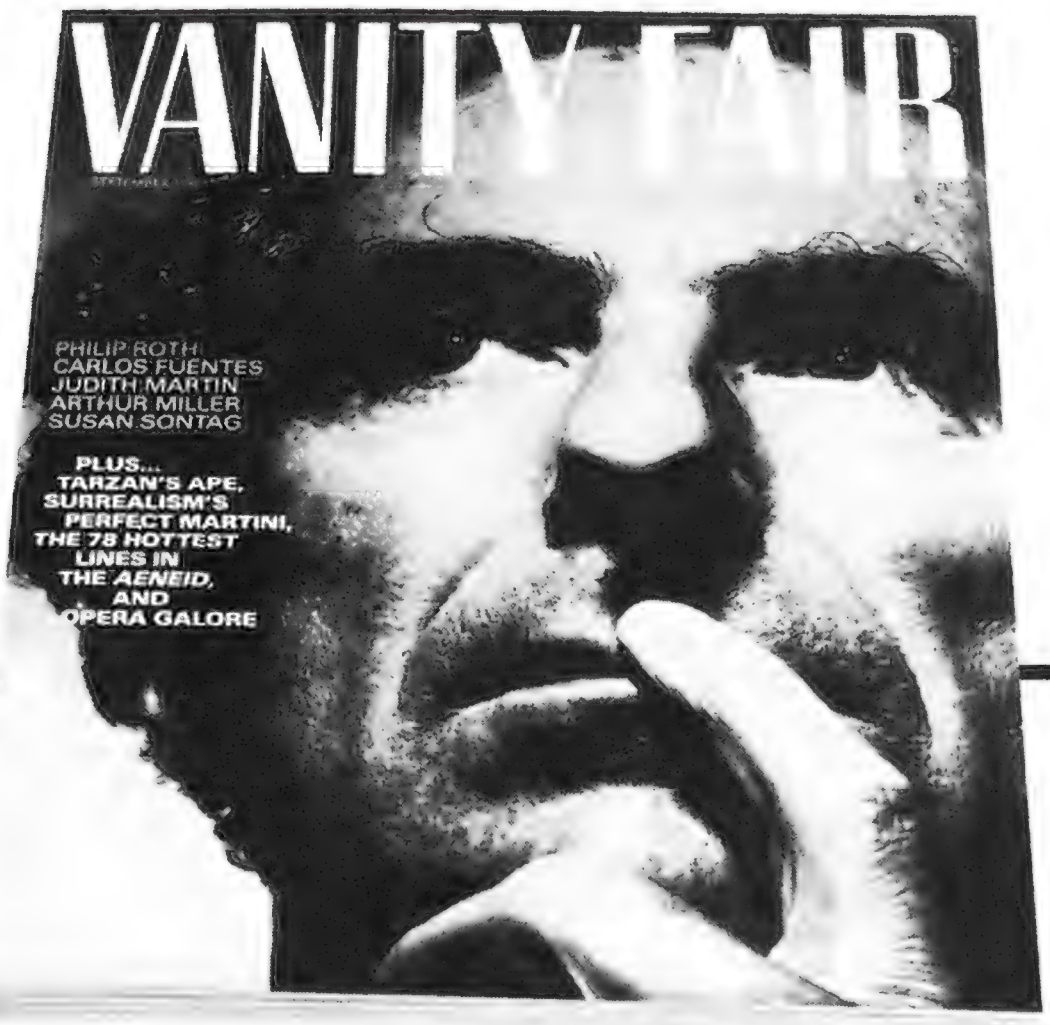

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VANITY FAIR

prior to a Red Sox game with the California Angels at Boston. "Statistics are like a first-base coach," jokes Garagiola, himself a former big-league catcher. "They're not very interesting, but they're necessary."

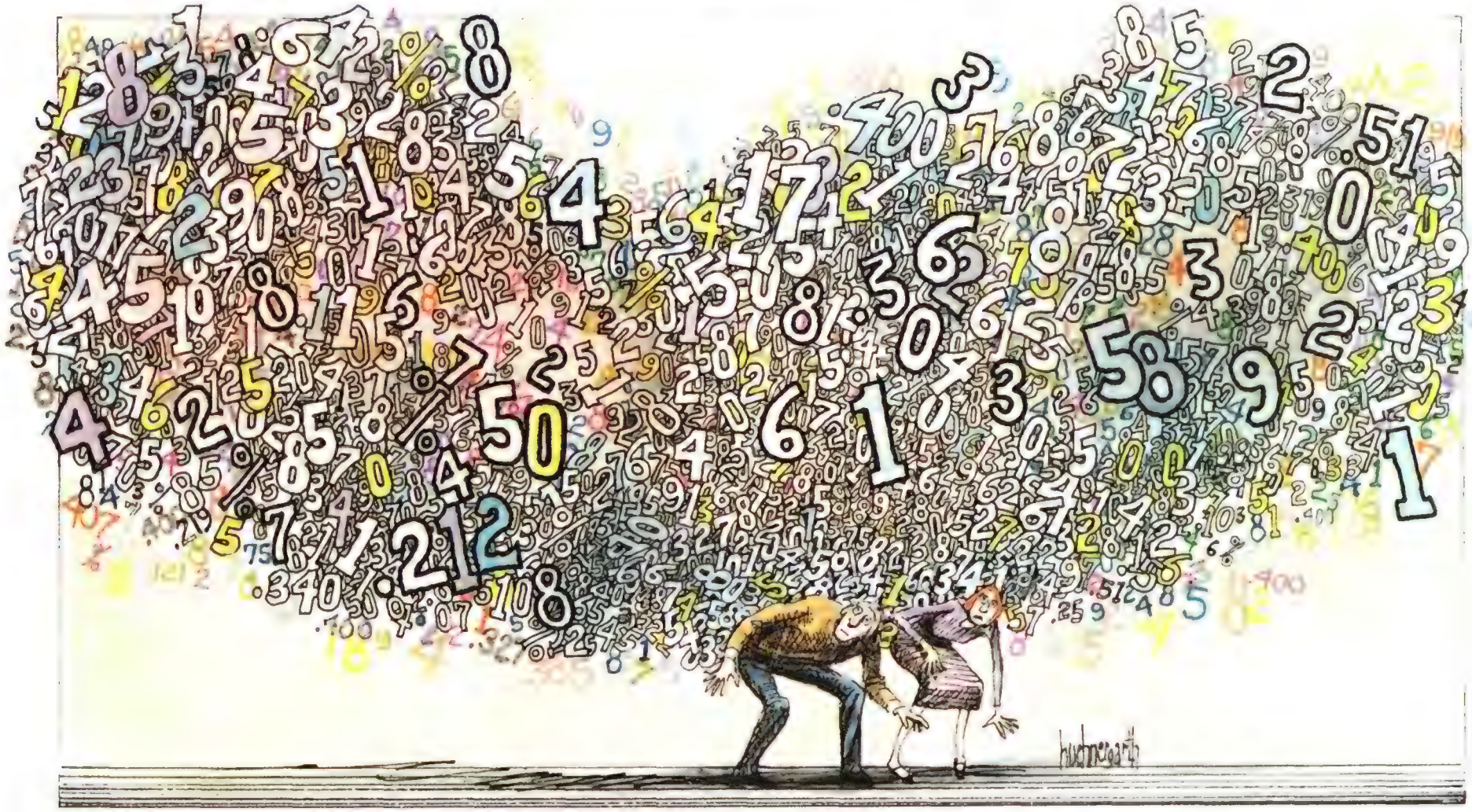
Before the game, Steve Danz was up until the wee hours in his hotel room, preparing approximately 200 file cards, each with a stat that might be used during the broadcast. A typical card might say: "Tim Foli, California shortstop—leads American League with 26 sacrifice bunts." When the game starts, Danz sits to Vin Scully's left in the booth, off camera, presenting his stat cards as events unfold on the field below. At one point, Scully glances at the card in Danz's palm and considers mentioning Foli's bunting record. However, Foli swings instead of going for the bunt, and Scully declines the card. He accepts the next card that Danz offers, incorporating it into his commentary: "Last year, Tim Foli was the toughest batter to fan in the American League, with one strikeout for every 22 times at bat."

Outside the stadium, in the players' parking lot, two big NBC vans are parked side-by-side. In one van, jammed with video screens and electronic gear, eight members of the broadcast crew sit in rows at control consoles, all wired together with microphones and earphones. This is the director's van, the control center for the broadcast. In the van next door, equally jammed with instruments, is a special computer called the Chyron, which generates the graphics display. Operating the Chyron today is Neil Wright, a genial young man, recently graduated from the communications program at the University of North Carolina, whose fingers fly across the complex keyboards. "Give me 433," says a voice in his earphones, coming from the director's van, and he types in the code number, which summons up on one of the Chyron's multiple screens a stat that Steve Danz calls a "hero": "Rod Carew's batting average has been about 110 points higher in games decided by four or more runs than in close games."

"Chyron's right," says the production assistant responsible for verifying the Chyron graphic's accuracy. At this moment, with Carew still at bat and with Vin Scully having just mentioned Carew's ostensibly uneven clutch hitting, Carew connects with a solid single-base hit. The director decides to kill the graphic.

The numbers do not vanish when the game is over. At Elias Sports, at the *New York Times*, at the league and team headquarters, at scores of sites around the country, computers are whirring, adding this game's numbers to the great statistical compost heap that serves as baseball's memory. It is all there. As former New York Yankee manager Casey Stengel liked to say: "You could look it up!"

Statistics do not vanish when a game is over. Computers keep them alive, adding steadily to the immense burden of data that modern fans must shoulder.



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1. To enter, submit a black-and-white or color photograph (2¼" x 2¼" to 8" x 10") of a scene that you feel "whispers." Slides and transparencies are not accepted.
2. Handprint your name, address, and zip code on the official entry form or a plain piece of paper. Glue or tape it to the back of your photo entry. Do not write on photo. Include cardboard backing to protect picture in mail. Include with your entry the answer to the following question: What do the initials "J&B" on a bottle of J&B Rare Scotch stand for? Your entry will not be eligible for judging unless this question is answered. The information needed to answer this question may be found by looking at the label of any bottle of J&B Rare Scotch. You may obtain a free label facsimile by writing to: J&B Label, P.O. Box 3244, Syosset, NY 11775.
3. Enter as often as you wish, but each entry must be mailed separately to: J&B Third Annual "It whispers" Photo Contest, P.O. Box 3258, Syosset, NY 11775. Entries must be received by December 31, 1983. No responsibility is assumed for lost, misdirected or late mail.
4. Entries will be judged on the basis of originality (0 to 30 points), relevance to the theme (0 to 40 points), composition (0 to 20 points), photographic technique (0 to 10 points). Winners will be selected under the supervision of National Judging Institute, Inc., an independent judging organization whose decisions are final on all matters relating to this contest. All prizes will be awarded and winners notified by mail. Prizes are not transferable or exchangeable. Only one prize to an individual or family.
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Oil portrait of Jane Taylor (left) and her sister Ann was painted by their father, Isaac, in 1792, when Jane was nine, Ann ten. Jane wrote her immortal poem about "The Star" 14 years later, when she was 23.

By Joseph Kastner

Everyone knows her rhyme, but who remembers Jane?

Miss Taylor, author of 'Twinkle, twinkle, little star,' was a literary lioness who came from a family of prodigious writers

By 1905 edition, the Taylor sisters were credited as major contributors to an originally anonymous book.

For some time now, whenever I mentioned to friends that I was writing an article on Jane Taylor, the response was always the same. First came a pause and then: "Jane Taylor?"

I expected that, of course, for although some lines of poetry that Miss Taylor wrote are on almost everybody's lips, her name is in almost nobody's mind. Though she wrote many popular children's poems, some admired satirical verse, a widely read novel and some remembered hymns, and although she was praised by the most eminent poets of her time, and her portrait was included in a gallery of eminent British women at the Chicago World's Fair of 1893, Miss Taylor's anonymous immortality rests today on one guileless little poem entitled "The Star," which starts out "Twinkle, twinkle, little star. . . ." And this is a good time to get to know her, for 1983 is the year of her 200th birthday.

I had come upon her roundabout, in a reference to an unrelated 19th-century figure, Sarah Josepha Hale, who was noted for editing *Godey's Lady's Book* and, parenthetically, for writing "Mary Had a Little Lamb." Checking out Mrs. Hale, I found in another parenthesis a reference to Miss Taylor and "Twinkle."

Pursuing that parenthesis, I discovered not only a lady of talent, piety and wit, but a hyperproductive family whose work was very familiar to the libraries, nurseries, art galleries, seminaries and alehouses of 19th-century England. These multifarious Taylors kept distracting me from Jane. Looking for her in the encyclopedic British *Dictionary of National Biography*, I had to get through three kinsmen, all named Isaac, before I got to Jane, then go on in the next entry to learn about brother Jefferys and over into another volume to read about sister Ann, picking up bits of information along the way about her mother, known as Mrs. Taylor of Ongar (a family home).

When I looked up the poem that made Jane famous, I found it tucked away in a small book, published in 1806, called *Rhymes for the Nursery*. The poem itself did not mention any author. Nor did the title page explain much. It simply said "By the authors of Original Poems for Infant Minds." And the title page of *Original Poems* obliquely gave the authors as "Several Young Persons."

The various entries on the Taylor clan showed a family bent toward the talent, if not the modesty, of these Young Persons. The first Isaac, Jane's grandfather, became one of the finest engravers of his day. A member of London's liveliest circles, he did an illustration for his friend Oliver Goldsmith's "The Deserted

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Grandfather Isaac was an eminent engraver for London's literary set.

Village," frontispieces for his friend Samuel Richardson's novels and portraits of his friend David Garrick acting his great Shakespearean roles.

Isaac, his son, also became an engraver, noted for his illustrations of the Bible, Shakespeare and *Chambers' Cyclopaedia*. A confirmed Dissenter, he was an active and sought-after preacher. Turning to writing, he became a successful author, as did his wife, two of his sons, and two of his daughters. Altogether, his immediate family turned out at least 90 literary works.

Neither Isaac nor his wife was pleased, however, when their daughters, Ann and Jane, gave precocious evidence of being authors. Ann, the elder by a year, was scribbling poems and stories almost as soon as she could write. Jane, as a child, used to climb up on the baker's kneading board and from this floury pulpit deliver homilies like those she heard in church. At the age of nine she asked her father to give her a garden, delivering her request in the form of a five-stanza poem.

As they grew up, the two girls did their writing in moments squeezed

from a busy day taken up with helping their mother with housework and their father with engraving.

Jane would jot down ideas for rhymes on the margins of her drawings. Ann, lest she forget rhymes as they came to her, used to dash from the room and, she recalled, "in honest haste and unintelligible scribble pinioned the fancy or the lines to the first slip of waste paper I could find."

Ann had in mind an epic explaining the events that led up to the *Iliad* and Jane plotted a story about the love affairs of a Spanish grandee. Their parents did not suppress them, but Isaac asserted that he would not have his daughters grow up to be authors, while their mother declared that "lady authors would have been better to employ themselves in mending the family stockings."

They had an unstructured but stimulating education. Their father, a man of curious mind, read widely and avidly and talked of what he had learned of geography, history, chemistry, astronomy. Their mother, a lady of sense and ingenuity, noted that her husband at meals was burying himself in a book or a newspaper instead of chatting with her. For one thing, she was quite hard of hearing.

The Rev. Isaac, Jane's father, was an engraver who also took up the pen.

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Brother Isaac, besides writing, invented popular beer-keg spigot.

Fearful that he might be getting bored with her, she approached him and suggested that mealtimes might be profitably spent if she read aloud to the family. Her proposal, she said, "was cordially received," and so at breakfast and tea she would read away. Thus she kept her husband interested, enlightened the children and "rescued a mind from inanity."

Ann was the first in the family to gain literary recognition. When she was about 15, she wrote an election song which was published in a broadside. Dazzled at seeing herself in print, Ann started sending contributions to a children's magazine called *Minor's Pocket Book* which offered prizes for answers to puzzles. Ann, as she said, "unravelled enigma, charade and rebus" in verse and won first prize—six copies of the magazine. She began submitting poems regularly; Jane, who followed Ann's lead, sent in a poem called "The Beggar Boy," her first published work.

Soon after, the magazine's publisher sent a letter to Mr. Taylor. He had, he said, "received some pieces of poetry from some branches of thy family" and asked, rather stylishly, "when any of their harps be tuned

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and their muse in good humour" that they send "specimens of easy Poetry for young children." He would pay either in books or in cash. "Books good," Ann remarked, "but cash better" and settled for £5.

That brought me in my research to their first book of easy poetry written by Jane and Ann (with some verses by others), published in 1804. *Original Poems for Infant Minds,* a literary historian says, "awoke the nurseries of England." The publisher gave his authors a £5 bonus. I recognized one of the poems from my own childhood reading— "My Mother," which, I discovered, was Ann's most famous work. It goes:

Who fed me from her gentle breast,
And hush'd me in her arms to rest,
And on my cheek sweet kisses prest?
My Mother. . . .

When pain and sickness made me cry,
Who gaz'd upon my heavy eye,
And wept, for fear that I should die?
My Mother.

And on to a rather forbidding end:

For God, who lives above the skies,
Would look with vengeance in His eyes,
If I should ever dare despise,
My Mother.

The young authors quickly wrote a second volume of *Original Poems.* Ann and Jane were given more time for their writing. Ann did serious criticisms for a literary magazine. Jane finally had a study of her own which, she told a friend, she filled with "all the apparatus necessary for a poet . . . a few book-shelves, a table for my writing-desk, one chair for myself, and another for my muse." Here, in this retreat, she wrote, "I used to roam and revel 'mid the stars . . ./ When in my attic room, with untold delight/I watched the changing splendours of the night."

She distilled those splendors into the 20 simple lines of "The Star"

The author wrote on Edward Lear for SMITHSONIAN, *September 1981. His next book: a history of bird watchers.*

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which, for the benefit of those who can't recite beyond line four, is given here complete:

Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky.

When the blazing sun is gone
When he nothing shines upon,
Then you show your little light,
Twinkle, twinkle, all the night.

Then the trav'ller in the dark,
Thanks you for your tiny spark.
He could not see which way to go,
If you did not twinkle so.

In the dark blue sky you keep,
And often through my curtains peep,
For you never shut your eye
Till the sun is in the sky.

As your bright and tiny spark
Lights the trav'ller in the dark,
Though I know not what you are,
Twinkle, twinkle, little star.

Rhymes for the Nursery, which appeared in 1806, was even more popular than *Original Poems.* Edition followed edition. Robert Southey, the poet laureate, praised its authors. Sir Walter Scott wrote that his children were "busy with *Rhymes for the Nursery* and it is perhaps the highest proof of their being admir-

The Rev. Joseph Gilbert won Ann's hand, curtailing her career as a writer.

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Mrs. Taylor, Jane's mother, wrote on etiquette for young ladies.

ably adapted for their benevolent purpose that the little students have most of them by heart already."

Readers found more to enjoy in them than just "The Star." They were quite taken with a poem of Ann's, "The Notorious Glutton," about an ailing duck who tells her doctor that her troubles come not from overeating but from the fact that she went around with wet feet. But the simple genius of "Twinkle's" thought and the plainness of its rhymes eventually made it as well known, probably, as any poem ever written. It was set to the music of a French tune, "Ah! Vous Dirai-je, Maman" (to which Mozart and Dohnányi wrote sets of well-known variations) and after a while "Twinkle" was as often sung as recited. It was quickly translated into German, Dutch and Russian, and many years later Ann reported she had learned that " 'Twinkle, twinkle, little Star' has been translated well into both Greek and Latin. How little did such a possibility enter Jane's head in writing it!"

What must have been in Jane's head at the time was the realization that she had to be a writer. "In truth," she wrote a friend, "Jane Taylor of the morning and Jane Tay-

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lor of the evening are as different people, in their feeling and sentiments, as two such intimate friends can possibly be. The former is an active, handy little body who can make beds or do plain work and now and then takes a fancy for drawing, etc. But the last-mentioned lady never troubles her head with these menial affairs;—nothing will suit her but the pen. . . ."

Events conspired to help Jane-of-the-evening. The French Wars cut British publishers off from European markets and the engraving business fell off so badly that even Isaac, distinguished as he was, had been "glad," he said, "to engrave a dog collar." Ann and Jane continued to write, and in 1810 they brought out *Hymns for Infant Minds.*

The sisters had a head for business now. Having got pittances for their first best-sellers, they kept the rights to *Hymns* for themselves and quickly netted £150. They put out a second volume of hymns and then their long, loving collaboration was broken up.

The Rev. Mr. Gilbert, a widower,

Watercolor of Jane, painted by her father, is from an undated album.

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wrote Ann a letter. He had read her works and had heard much good of her, he said, and would like to call "with the purpose of soliciting her heart and hand. . . ."

After receiving Mr. Gilbert, Ann could not make up her mind whether she liked or disliked him, "for either of which I should have been almost equally thankful." But she gave him permission to write her; he must have been more convincing in prose than in person, for after a year of corresponding, she married him.

Now on her own, Jane in 1815 published her only novel, *Display, A Tale*, about the evils of ostentation. In the copy of *Display* that I read, after having come to "The End," I found a little advertising section, customary in 19th-century books, for other books by the same publisher. There were a dozen or so by various Taylors, including three volumes by Mrs. Taylor.

I was surprised that the mother who had such decided opinions against lady authors should become one herself. Her books offered practical advice to young ladies. One was titled *Practical Hints to Young Females, or the Duties of a Wife, a Mother, and a Mistress of the Family.* She also collaborated with Jane on *Correspondence Between a Mother and Her Daughter at School*, Jane writing as a girl starting in a new school and Mrs. Taylor responding with sound and rather dull comment on the daughter's experiences.

Mr. Taylor, for his part, went on to write many books for young people, notably a series written "for the amusement and instruction of little tarry-at-home travelers."

The other Taylors were laggards, slow to take up the writer's trade. But they caught up. Brother Jefferys did several popular books for boys and an Aesop's Fables in rhyme. Brother Isaac, after gaining a reputation as a miniaturist and Bible illustrator (Rossetti supposedly compared his work to Blake's) veered off into

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Jane Taylor made this watercolor about 1800, but it was her own contention that "nature never intended me for an artist."

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theology, writing on the Pentateuch and producing his best-selling *The Natural History of Enthusiasm*. While his art and writing earned him a cultivated public, Isaac gained a wider one with a beer-keg spigot he invented and patented. It was so superior that it was soon being used in almost every pub in Britain.

After these discursions, I caught up again with Jane in Cornwall where she had gone as companion to brother Isaac, who was in poor health. Now in her early 30s, Jane was a slight woman with even features, steady eyes, and her brother wrote, "a peculiar archness and sprightliness of manner."

She was a delightful but sometimes prickly person. She could not stand affectation—"if there is anything I dislike to receive, or that I am unambitious of writing, it is a *clever* letter." When people tried to engage her in smart conversation, her brother observed mildly, "she would . . . repress all the playfulness of her wit."

Her playfulness had barbs imbedded in it. "The reason why so few men . . . wish to encourage the mental cultivation of women," she remarked, "is their excessive love of the good things of this life; they tremble for their dear stomachs, concluding that a woman who could taste the pleasures of poetry or sentiment would never descend to pay due attention to those exquisite flavours in pudding or pie that are so gratifying to their philosophic palates. . . ."

It is startling, when reading her satirical verses in *Essays in Rhyme*, to realize that the Jane Taylor who wrote these also wrote "Twinkle." "Prejudice," for example, tells of a lady whose husband has risen from shopkeeper to mayor and who cannot adjust to her new station:

> Her thoughts, unused to take a longer flight
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An anonymous artist portrayed Taylor sisters, Ann (left) and Jane.

Jane now had a kind of two-level fame. John Keats, sending a copy of *Essays in Rhyme* to his sister, said he remembered her liking "for those pleasant little things the *Original Poems*. The essays are the more mature production of the same hand." Robert Browning called the nursery rhymes "the most perfect things of their kind in the English language," while some critics summoned up Pope in talking of Jane's satirical verse. Yet she showed a grumbling ambivalence about being a literary personage: "I am surrounded with those who know that I am—'Miss Taylor,' " she once complained, "but know not that I am—'Jane'. . . ."

In her mid-30s, she suffered "an induration in the breast," a tumor. Though her doctor advised her to give up the exertions of writing, she continued to write for an eager audience under the pseudonym of "Q.Q." —poems with light-hearted morals, fables with dark undertones. She made herself ready for death. "There, Betsey," she said to a friend while looking at a churchyard, "that is

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where my grave is to be." In her last hours in 1824, she instructed her family: "Put me on a clean cap, and set the room to rights, for I am going." She recited "Jesus to thy dear faithful hand, my naked soul I trust." And as her breath failed, she kept repeating, "My naked soul, my naked soul. . . ."

Jane's reputation and public kept growing after her death. The one who seemed to suffer most from Jane's fame, strangely enough, was her sister, Ann. Bringing up eight children, she had not much time to write. She said, perhaps a little enviously, to Jane that she wished "with a husband and children I could share a glimmer of your fame and . . . a portion of your reading." When she was in her 80s, she was astonished to read in a literary magazine a professor's criticism of her poem "My Mother." "One of the most beautiful lyrics in the English language," the professor wrote, was spoiled by the threat of divine retribution. He proposed that it be rewritten—by Tennyson.

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the poet laureate; she sent the magazine her own revision. Instead of

> For God, who lives above the skies,
> Would look with vengeance in His eyes,

she would have it go:

> For could our Father in the skies
> Look down with pleased or loving eyes,
> If ever I could dare despise
> My Mother?

Suddenly she began to get letters from readers, astonished that the lady who had written all those familiar poems was still living. "A green sprig of laurel has lately sprung over my grey hairs," she told her children.

Then a writer, commenting on the popular Taylor verse, credited it to Jane. Her children were outraged but Ann was philosophical.

Jane herself, she said, had always "conceded a large share of birthright to me, I seemed to be generally accepted as the cleverest. The mistake has been rectified by the public since . . . attributing to her many productions that are really mine. Publishers have frequently . . . announced 'by Jane Taylor' when 'Ann Taylor' was the guilty person. Dear Jane never needed to steal, while I could not afford to lose.

"But," Ann ended with a sigh, "what signifies it?" And, considering how unfeelingly fame has treated both of them, Jane would probably join her sister in the sigh.

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Book reviews

The Enthusiast: A Life of Thornton Wilder
Gilbert A. Harrison
Ticknor & Fields, $19.95

Probably all lives are finally strange—both to the people living them and to outside witnesses. You exchange platitudes with the postman for 20 years, and all the time he is leading an inner life of extraordinary complexity. Your congressman seems the dullest of the dull and utterly conventional besides. Turn a reporter loose and a dozen secrets emerge.

Certainly this is the case with Thornton Wilder, the great celebrator of ordinary American life. The person who knows him chiefly from having seen *Our Town* (or, likely enough, having acted in it in high school) is apt to assume that Wilder must have been bland, cheerful and good, a middle-class Middle American who just happened to write novels and plays. Critics tend to have a suitably elaborate version of the same view—and consequently to dismiss Wilder as shallow. Where was his dark night of the soul?

To read Gilbert Harrison's biography is to be quickly educated out of that view. Wilder *was* a good man, remarkably so, and there was indeed a quality of heroic optimism in him. There was every kind of sorrow and strangeness as well. The man who celebrated ordinary life in some ways barely lived himself, and the man who praised the family fled all intimacy. He drank too much, and in his 70s he was still smoking three and a half packs of cigarettes a day. "I am never free of a sense of inadequacy," he recorded in his journal at the height of his fame. He wrote of "my dark (and true) mood."

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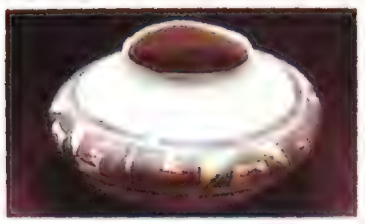

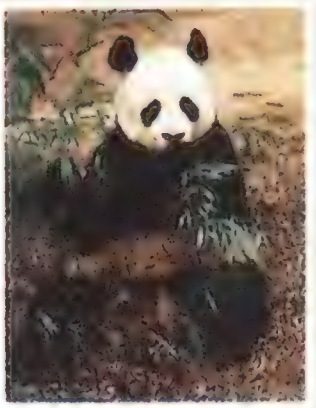

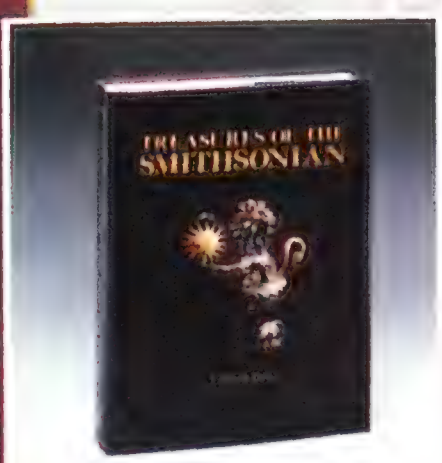

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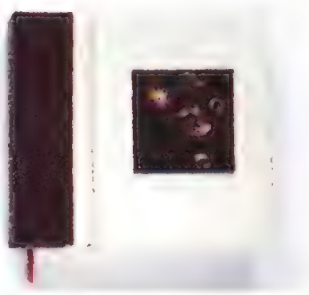

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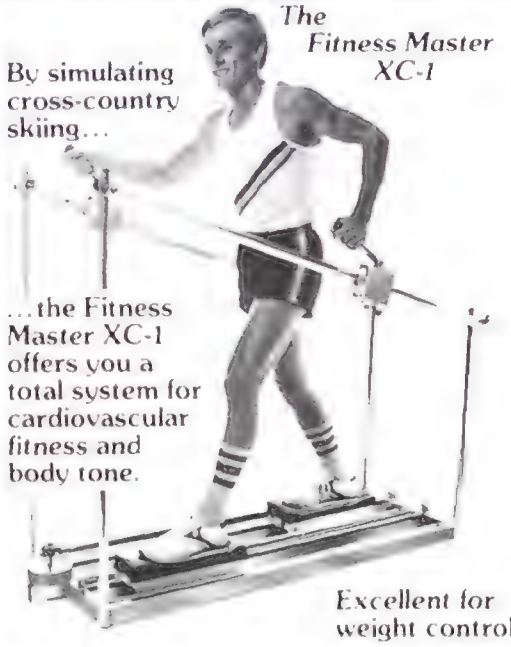
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Thornton Wilder grew up partly in America and partly in China. His father was an American consul who thought and acted like a missionary. The boy was a misfit in both countries. To his teachers and to his fellow students alike, he seemed not quite all there. And indeed he wasn't. "A hoe or a hospital pail or a bayonet in my hand are phantom," he wrote at the age of 19, "for my hand holds always a fountain pen." (Bayonets were on his mind because this was 1917 and America had just joined the war.)

In college, first at Oberlin and then at Yale, his brilliance began to emerge, but life remained an ungraspable phantom. "I am a personality peculiarly isolated," he wrote in his journal, and he was recording sober fact. Wilder seems never to have slept with a woman, and though he may have had a few brief homosexual affairs (the evidence is unclear), he had no real intimacy with a man, either. His closeness was with words. What he liked to do on intimate occasions was to read aloud from work in progress—in his journal he even records deeply satisfying dreams in which he is doing this. A strange life indeed.

There are more surprises to come. Wilder the quintessential American was also the quintessential cosmopolite. He traveled constantly, all over the world. When he wasn't doing his own work (and that was often—he had writing blocks of appalling duration), he was deep in the study of Sartre, of *Finnegans Wake*, of Lope de Vega. Once at a conference he not only gave a speech of his own on Goethe, he served as translator when

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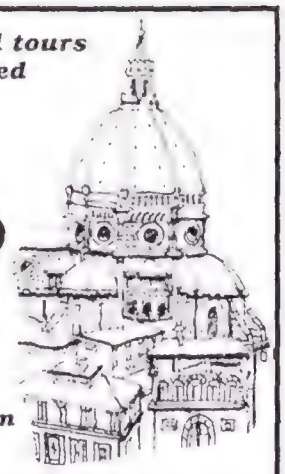

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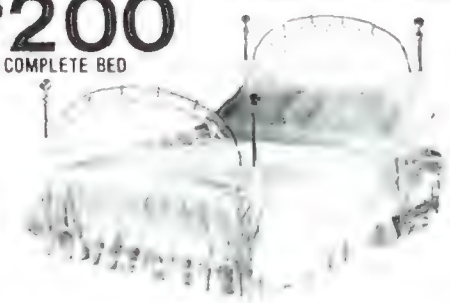

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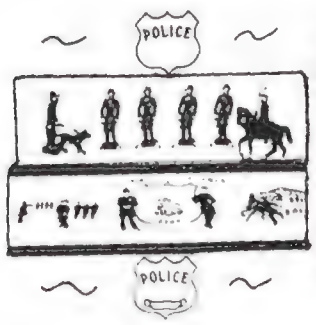

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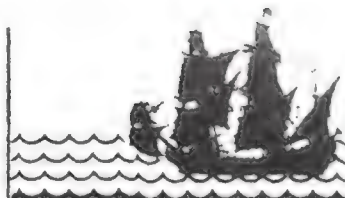

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Ortega y Gasset spoke in Spanish and when Albert Schweitzer spoke in German. He was the person in all the world that Gertrude Stein most wanted to collaborate with on a book.

But Wilder the isolato and Wilder the cosmopolite are supplements to and not a contradiction of the image we all have of Wilder the friendly American. He *was* friendly, as long as you didn't crowd him too close. Most of his life he wrote 20 or 30 letters a day, advising, helping, encouraging other people. No man was more generous with money. He was marvelous company. He could charm a 6-year-old child or the entire blue-collar population of a little Arizona town.

Gilbert Harrison, who has studied Wilder as closely as Wilder studied Lope de Vega, brings all of this together in a thoroughly readable book. Its one flaw is a shade too much chronology. There are times when Harrison tries to follow Wilder almost day by day, and the accumulation of detail gets overwhelming. Wilder lived in hundreds of places and knew thousands of people; perhaps more a thematic and less a then-he-did-this account would have been desirable.

And yet if I try to think of anything I wish Harrison had omitted, except maybe a few lists of lunch guests, I can't. Thornton Wilder was not only complex, he was a true visionary, and all of his words matter. Take these, for example, which are one of his many attempts to sum up his country and its role in the world—they apply to Wilder himself: "The American we know—the American which we and foreigners so often laugh at and despise—the American in ourselves who is often the subject of our own despair—the joiner, the go-getter, the moralizer; the businessman with ulcers; the clubwoman who cannot remember one word of the morning lecture; the millions in the movie houses gazing at soothing lies—all, all . . . are very busy doing something of great importance. They don't know it and they often do it awkwardly and fall short. They are inventing a new kind of human being—a new relationship between one human being and another—a new relationship between the individual and the all. It is very occupying; it takes an immense toll in shattered lives and minds. It is not easy to be an American because the rules aren't made yet."

Wilder did something to help make

them. Myself, I think he leaves most dark-nighters in the dust.
Noel Perrin
Writer and Professor of English
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Most historians in American universities probably have read no more than a small part of Parkman's writing, if they have read any at all. It is not that Parkman's research is suspect, but his interests are no longer the interests of the "professional" historian. The reading public probably has better judgment; the officers

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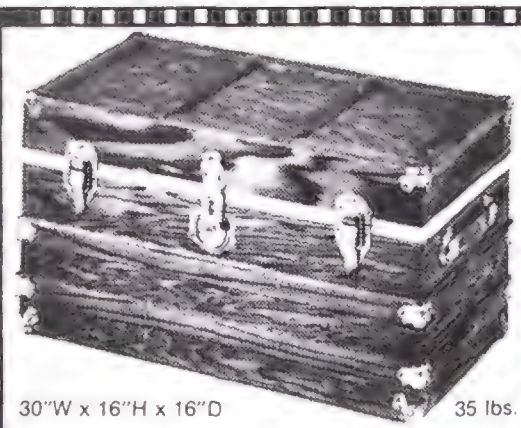

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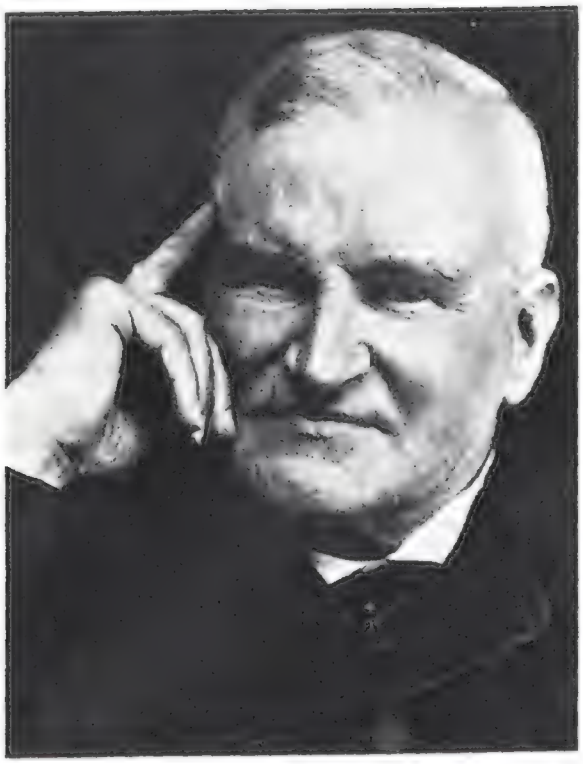

Some 35 years later, Parkman worked on climax of series, *Montcalm and Wolfe*.

and advisors of the Library of America certainly have, for Parkman's history tells a magnificent story in grand and compelling prose.

Parkman decided when he was 18 years old to write the books that make up *France and England in North America*. He was a sophomore at Harvard at the time, the son of a Unitarian minister in a distinguished New England family. No doubt the conception of his work developed as he pursued it over the next half-century, but the early volumes display much of the strength of the later ones. Parkman possessed a sense of the importance of large historical events, and his ideas about the nature of the forces contesting for North America assumed their shape as his studies began and evidently were always indebted to a sense of the dramatic. *France and England in North America* is constructed around great—and conflicting—contrasts: the liberty of Englishmen in the Old and the New Worlds is played off against the absolutism of France and Canada, Catholicism is cast against Protestantism, and civilization confronts the savagery of the forest.

The grand themes of *France and England in North America* are not given arid treatment in Parkman's account. Rather his pages swarm with life and color. There are heroes—LaSalle, Montcalm and Wolfe are three of the greatest—and there are ordinary people. The Indians are not the creatures described by

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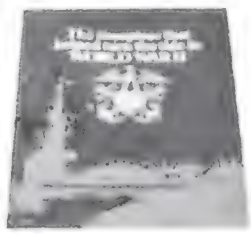

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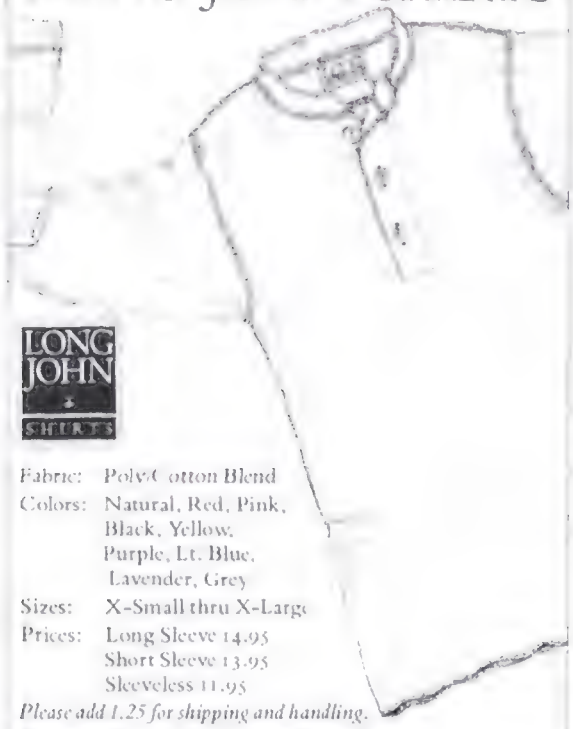

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cultural relativists or anthropologists, but savages. Yet there are Indians Parkman admired. There are also the Jesuits. These formidable figures attracted Parkman's admiration, but they are often treated with irony in his work, for their single-minded devotion, Parkman believed, amounted to a kind of blindness and led to consequences for their faith—and for the Indians—that none of them anticipated. And there is nature, beautiful and sublime, but unyielding to human efforts to master it.

David Levin, who edited these two volumes, chose the most reliable texts, corrected typographical errors, revised the index and provided unobtrusive but helpful notes. One hopes that *France and England in North America* will be widely read. It is a great work of history.

Robert Middlekauff
Director of the Huntington Library
San Marino, California

The Galleys at Lepanto
Jack Beeching
Scribner's, $17.95

In the Doge's Palace in Venice, across the ceiling of the armory of the Council of Ten, hang blood-red Turkish banners, trophies of a Christian triumph in 1571. Although Cervantes, who was wounded in the battle, described it as "the greatest day's work seen for centuries," perhaps only Venetians, who treasure the standards, and the priests of Toledo Cathedral, who each year say a Mass for the victory, still remember Lepanto. Yet there was a time when that name was as famous as Hastings, Agincourt and Waterloo. Jack Beeching's *The Galleys at Lepanto* resurrects the drama of October 7, 1571, and affirms that Cervantes' judgment was not merely the nostalgia of an aging veteran.

The strength of Beeching's account lies in both his style, which is always lively and lucid, and his narrative sense. The author introduces his climactic battle by sketching the violent encounters that preceded it, such as the siege of Malta in 1565 and the revolt of Granada three years later, and by entertaining portraits of the often bizarre personalities who were at the center of events.

Beeching's account is focused on the violent and colorful career of Don John of Austria, the illegitimate half-brother of King Philip II of Spain. The 24-year-old prince was the hero of Lepanto, for it was

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his superb tact and dedication that held together the "Holy League" of Spain, the Papacy and the Venetian Republic—as unlikely a confederation as ever existed. Only once did Don John's sobriety desert him: at the opening of the battle, as his flagship collided with a Turkish galley, he "danced a galliard on the gun-platform to the music of the fifes."

The Holy League was the result of a unique moment in the ancient hostility between Christian and Muslim. Enmity among Christian powers had prevented union against Islam for some 400 years. By 1571, however, a combination of men and events drove Christians into cooperation. Pious and powerful, Philip II was alarmed by Turkish instigation of a revolt in Spain and by Turkish assaults on Malta and Cyprus. The pope was Pius V, the son of an Italian muleteer, an austere personality and a profound mystic, who dedicated himself to a crusade against the Turks. Venice was generally regarded as "the harlot who slept with the Turk," but by 1571 the Republic was frightened by Turkish attacks on Cyprus and suspicious that Turkish agents had blown up the huge powder magazine in the Arsenal, where the Venetian battle fleet had been constructed.

The sultan was Selim II, known as "the Sot," a brutal drunkard who surrounded himself with a bodyguard of 100 dwarfs, "clad in cloth of gold and all carrying murderous little scimitars." Physically unappetizing and naturally indolent, Selim was obliged to seek a military victory to legitimize his reign. Thus he sent out the Turkish fleet, whose flagship was adorned with a treasure from Mecca: a green flag bearing the name of Allah repeated in gold calligraphy 28,900 times.

The fleets met at Lepanto, a Turkish base in the Gulf of Patras on the Adriatic. It was one of the largest naval engagements in history, involving about 200 galleys and 50,000 men on each side. After hours of vicious fighting, the Turks were crushed. They lost all but some two dozen galleys and 10,000 men. Don John sent the Meccan flag to Philip II, and a galley took the good news to Venice.

Christendom rejoiced over the triumph, and the victory was commemorated in paintings by Titian, Tintoretto and Veronese. Yet, although the battle proved to lack practical value—Venice surrendered Cyprus to the Turks in 1573—for years to come Lepanto stood for the

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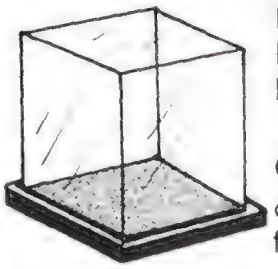

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Sincerely, Agatha

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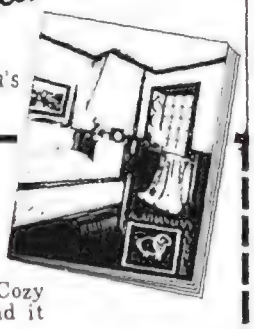

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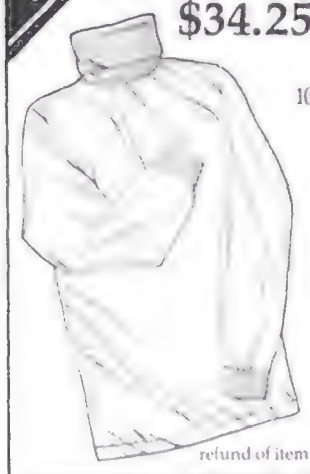

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triumphs that were possible when men united in the name of dedication and principle. As Sir Thomas Browne wrote two generations after the conflict: "Let me be nothing if within the compass of myself I do not find the battail of Lepanto. . . ."

Beeching's excellently written narrative convinces one that Lepanto should be remembered.

Robert Finlay
Renaissance historian

The Oxford Book of Death
Edited by D. J. Enright
Oxford University Press, $19.95

Some people when they read about measles immediately imagine they have the key symptoms, and for them the *Oxford Book of Death* is just the thing. Not even the most hypochondriacal reader, upon browsing here, will suppose he has suddenly developed all the signs.

Someone has suggested that this anthology of poetry, philosophy, epigram and wit on the subject of death is suitable for bedtime reading. It *is*, oddly enough, partly because one feels no guilt in dozing off with an anthology (as one does when dozing off with William James, say) and partly because the subject is one that most readers prefer in moderate bursts.

The admirable editor, D. J. Enright, is no doubt correct in saying that no reliable person appears to have returned from the country that this book deals with, and, foreseeing an occasional grumble on the score of completeness, pleads that virtually everybody has written about death, with the implication that his 350 well-printed pages include more passages concerned with that vasty realm than most of us have encountered.

Anthologies make strange bedfellows (Aeschylus and Woody Allen, for example) who vary, of course, in profundity. Woody Allen says he is not afraid to die. He just doesn't want to be there when it happens, a quip that falls short of, for example, the hostess of *Henry V* recounting the death of Falstaff:

". . . I knew there was but one way; for his nose was as sharp as a pen, and a' babbled of green fields. 'How now, sir John!' quoth I: 'what, man! be o' good cheer.' So a' cried out 'God, God, God!' three or four times. Now I, to comfort him, bid him a' should not think of God; I hoped there was no need to trouble himself with any such thoughts yet."

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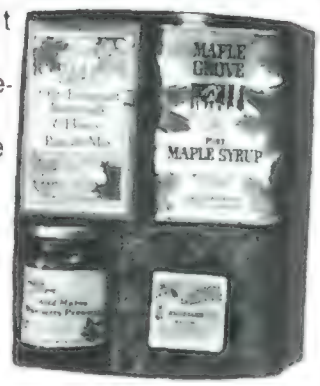

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Readers of anthologies, who are never so pleased at finding new flowers gleaned from the harvest fields of literature as they are pleased to say Ha! at the omission of some favorite quotation, will ask why Cleopatra's spectacular lines ("Peace, peace! Dost thou not see. . . .") were not quoted in the section on suicide, while a passage on suicide of children from *Jude the Obscure* is printed at some length, possibly to show that Victorian bathos was enough to flaw even so fine a writer as Thomas Hardy.

A major pleasure of an anthology is to sneer from time to time. The editor comments that words are not as effective as music in telling us about heaven, which permits the reader a querulous inquiry as to why he did not then issue a record album instead of a book. But the truth is that music tells less than language does about many things, including death. Besides, in truly divine music such as that of Mozart, one is never sure, merely by listening, whether the piece is an Agnus Dei or an aria to help seduce a country wench, whereas in great words one is always sure.

The extraordinary verse of John Donne ("Since I am coming to that holy room") is only one example from the book of language unsurpassed by music and hardly rivaled in fullness of thought in a short space of time.

Only a fool, or perhaps a speed reader, would expect from this handsome anthology the answer to his own questions about death, and so various are the temperaments, tastes, brains, faith and wit of mankind that what one man perceives as the profoundest and most beautiful thought is perceived by his fellow as the gibberish of a jobbernowl.

What is desired in a good anthology is a representative sampling of the subject from a wide range of opinion—no doubt the reason for Woody Allen's inclusion. Within the realm of the possible and the feasible (and he who thinks he can do better than editor Enright is at all times free to start compiling), the book is a success and, moreover, well indexed. Like so many Oxford books, it is a pleasure to read—from its lugubrious cover, which includes an illustration, "Charon Crossing the Styx," to its final deathbed comment by Welsh writer Goronwy Rees in 1979, who wondered, quite reasonably, "What shall I do next?"

Henry Mitchell
Washington Post columnist

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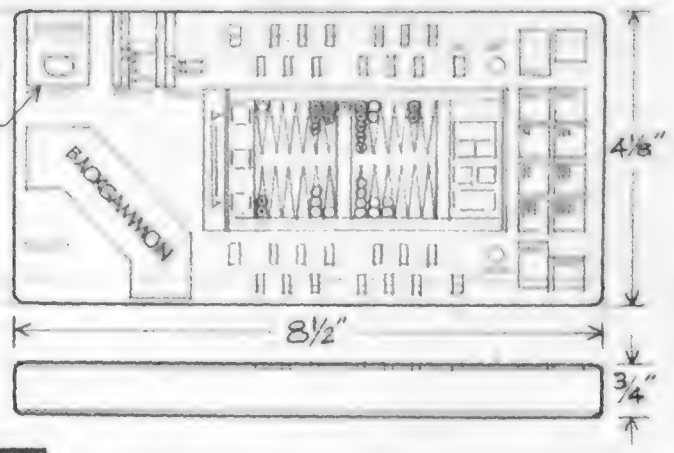

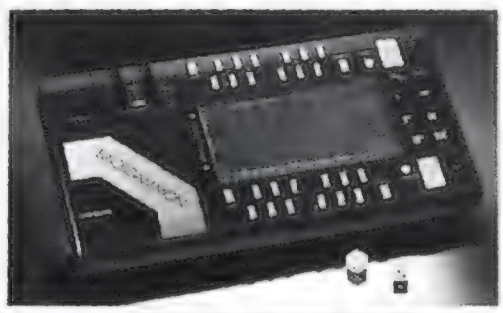

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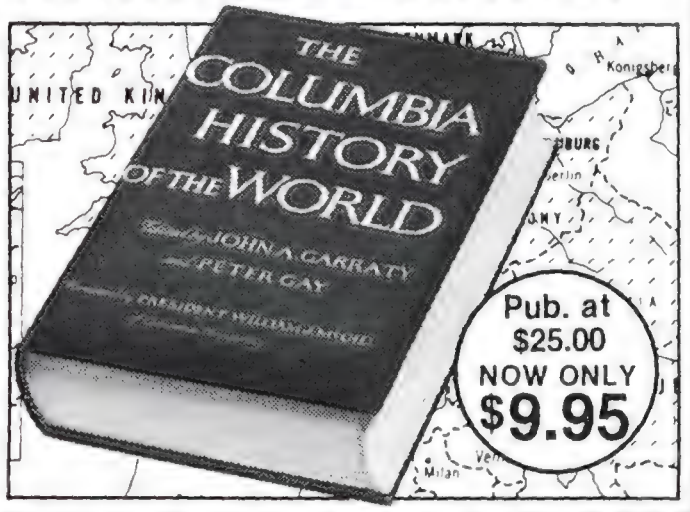

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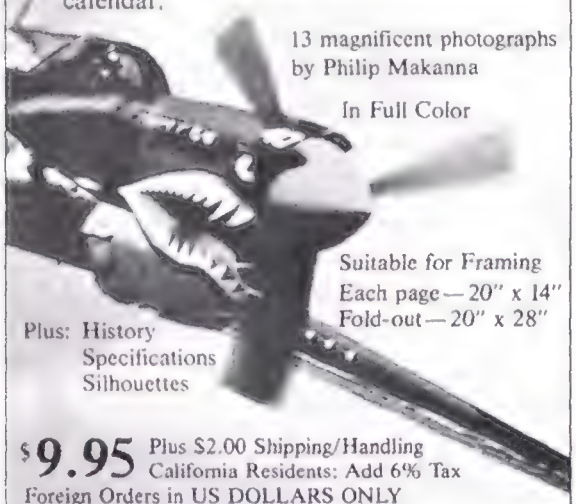

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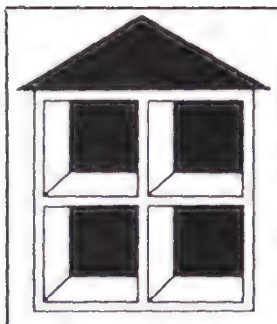

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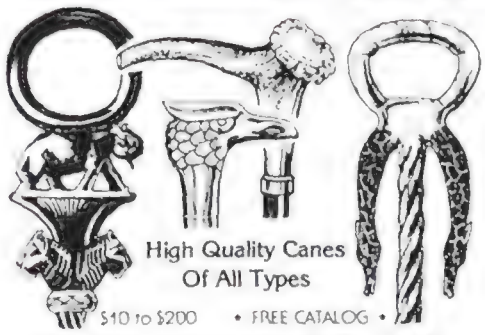

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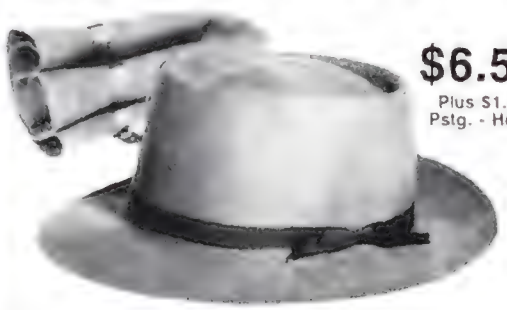

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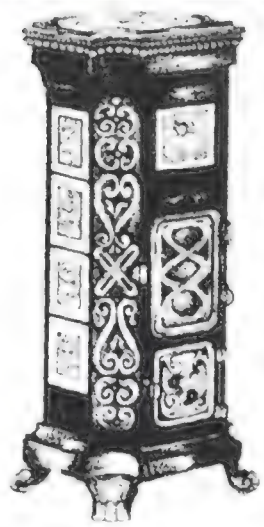

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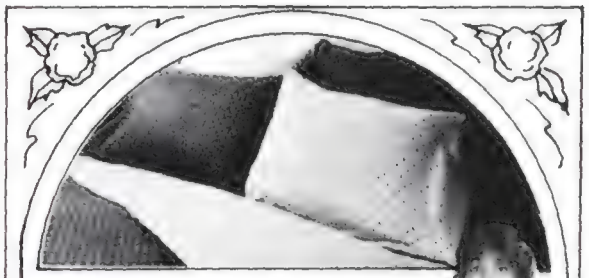

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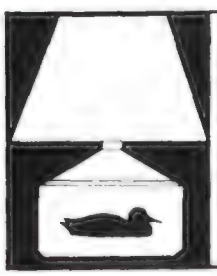

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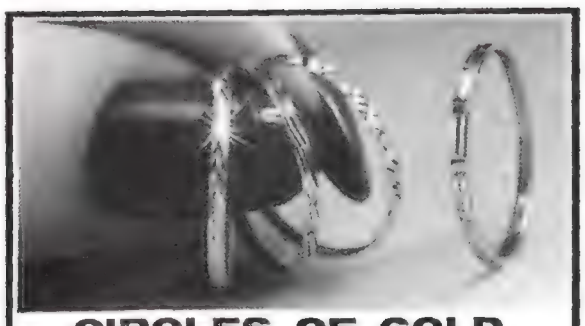

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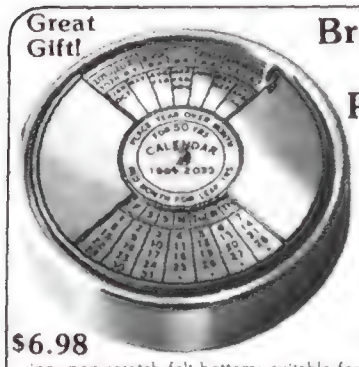

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Smithsonian highlights

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Special October exhibits and events

National Air and Space Museum

Flight of the Double Eagle V (Opens October 27) New exhibit commemorates the first manned balloon flight across the Pacific Ocean.

Air Express: New Life to an Old Idea (Opens October 14) The first aircraft used in this new industry.

Telescopes for Everyone (October 1; 9 A.M.) Monthly sky lecture.

Renwick Gallery

Lafayette Square, 1963-1983: Historic Preservation and Modern Architecture (October 21-January 15, 1984).

National Museum of American History

M*A*S*H: *Binding Up the Wounds* (through September 30, 1984) Sets and props from TV series; pictures from actual MASH units.

Hirshhorn Museum & Sculpture Garden

Direct Carving in Modern Sculpture: Selections from the Museum's Collection (October 6-November 27) Covers the years 1890-1940 in Europe and America.

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The Capital Image: Painters in Washington, 1800-1915 (October 19-January 22, 1984) Gilbert Stuart, Emanuel Leutze and many others who painted the city.

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National Portrait Gallery

Robert Cornelius Daguerreotypes: The First American Portrait Photographs (October 20-January 22, 1984) Works of the first true portrait photographer in this country.

Blessed are the Peacemakers (through November 27) Commemorates 200th anniversary of signing of the Treaty of Paris with artworks, documents.

Smithsonian events

For price information and tickets to Resident Associate events, call 357-3030:

The Great Garden Exchange: Horticulture in America, England and France 1750-1830 (October 29) All-day seminar.

The World of Modern Dance (Six Monday evenings beginning October 17; 6 P.M.) Lecture series by Suzanne Levy also includes two Kennedy Center performances.

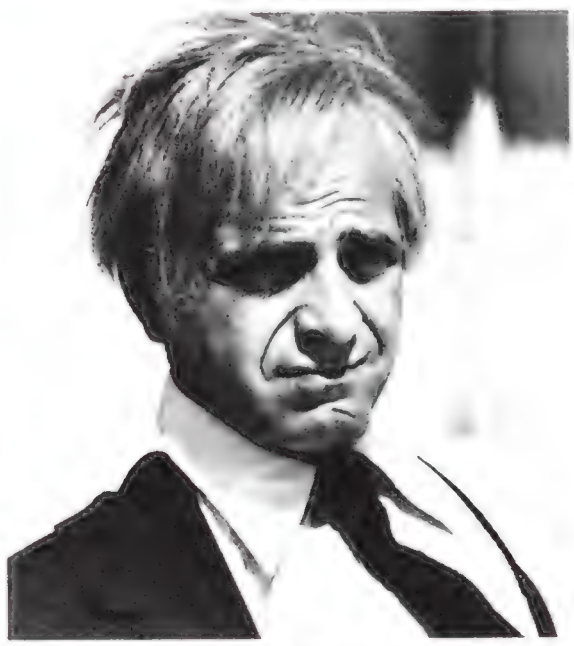
The British Imperial Legacy: Architecture for the Empire (Five Tuesday evenings beginning October 18; 8 P.M.) Lecture series by Robert Grant Irving.

Politics and the Press (Eight Tuesday evenings beginning October 18; 8 P.M.) In-depth course with Don Oberdorfer, *Washington Post* diplomatic correspondent.

Smithsonian on the air

Radio Smithsonian: Features on the weekly half-hour program include the National Zoo, a sketch of yodeling brakeman Jimmie Rodgers with original recordings, and a report on an impressive piece of visionary art.

Here at the Smithsonian: Two-minute TV features present behind-the-scenes activities of the Smithsonian.



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Smithsonian Galaxy: Short radio features explore history, science, art.

To find out which stations in your area carry these programs, write: Office of Telecommunications, MNH Room C222B, Washington, D.C. 20560.

Exhibition catalogs

Catalogs available at this time are:
M*A*S*H: *Binding Up the Wounds* ($2.50); details the current exhibition at NMAH.
Blessed are the Peacemakers ($5.50); details the Treaty of Paris exhibition at NPG.

To order, send check or money order to: Museum Shops, Box 44083, Washington, D.C. 20066-0083. Include either 15 percent of total purchase or a minimum of $1.75 to cover postage and handling.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington. To sponsor a show in your community, write: SITES, Smithsonian, Washington, D.C. 20560. Here are some October exhibitions:
Little Rock, Arkansas (October 1-30) *Matchsafes: Striking Designs*, Old State House.
Baltimore (October 1-30) *Images of China: East and West*, Maryland Science Center.
Bloomfield Hills, Michigan (October 8-January 1, 1984) *Marine Mammals of the World*, Cranbrook Institute of Science.
New York City (October 1-December 18) *Out of Africa*, City College of New York.
Youngstown, Ohio (October 1-November 6) *Kentucky Quilts*, Butler Institute of American Art.
Seattle (October 8-December 25) *Pressed on Paper: Fish Rubbings and Nature Prints*, Pacific Science Center.

Membership benefits

A pre-visit packet, full of helpful information for Associates coming to Washington, includes "Planning Your Smithsonian Visit," and is free; send postcard request or phone Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202) 357-2700; for hearing impaired, TDD (202) 357-1729.

Begin your visit at the Associates' Reception Desk in the castle, where a cordial welcome and special printed materials await you, 10 A.M. to 4 P.M. Other benefits: a half-hour orientation slide/lecture to the 13 museums; dining in The Court; discounts in most shops.

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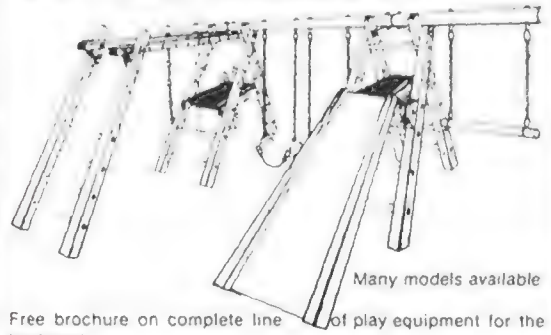

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A good match for any man

Today's matchbooks seem to be a medium for popular culture, with their ads for get-rich-quick schemes, learn-to-draw correspondence courses and truck-driving schools. They provide an interesting, if offbeat, insight into our society. This is even more true of their ancestors, the small portable boxes or matchsafes that people carried until the 1920s. About the only thing these early versions had in common was that they all held matches. Beyond that, there was no limit to their imaginativeness.

The Cooper-Hewitt Museum houses a collection of 4,200 matchsafes, which were hunted down by Carol B. Brener and Stephen B. Brener over a period of 15 years. More than 300 of them are now traveling in a new SITES exhibition, "Matchsafes: Striking Designs." This month it is at the Old State House Museum in Little Rock.

One puzzling matchsafe almost didn't get to travel in the show. A rattling sound suggested it might contain matches, making it unsafe for travel. But on its front were stamped the words, "Open this box and I'll stand you a Johnnie Walker." No one could figure out how to get the contraption open until someone set it on a table and gave it a spin—and centrifugal force tripped a hidden latch. An ingenious matchsafe—but then, as the pictures below demonstrate, they all are.
Constance Bond

Fist-shaped macho matchsafe boasts, "In this you'll find a match."

Novel version of horse-and-rider motif gives advertisement unusual charm.

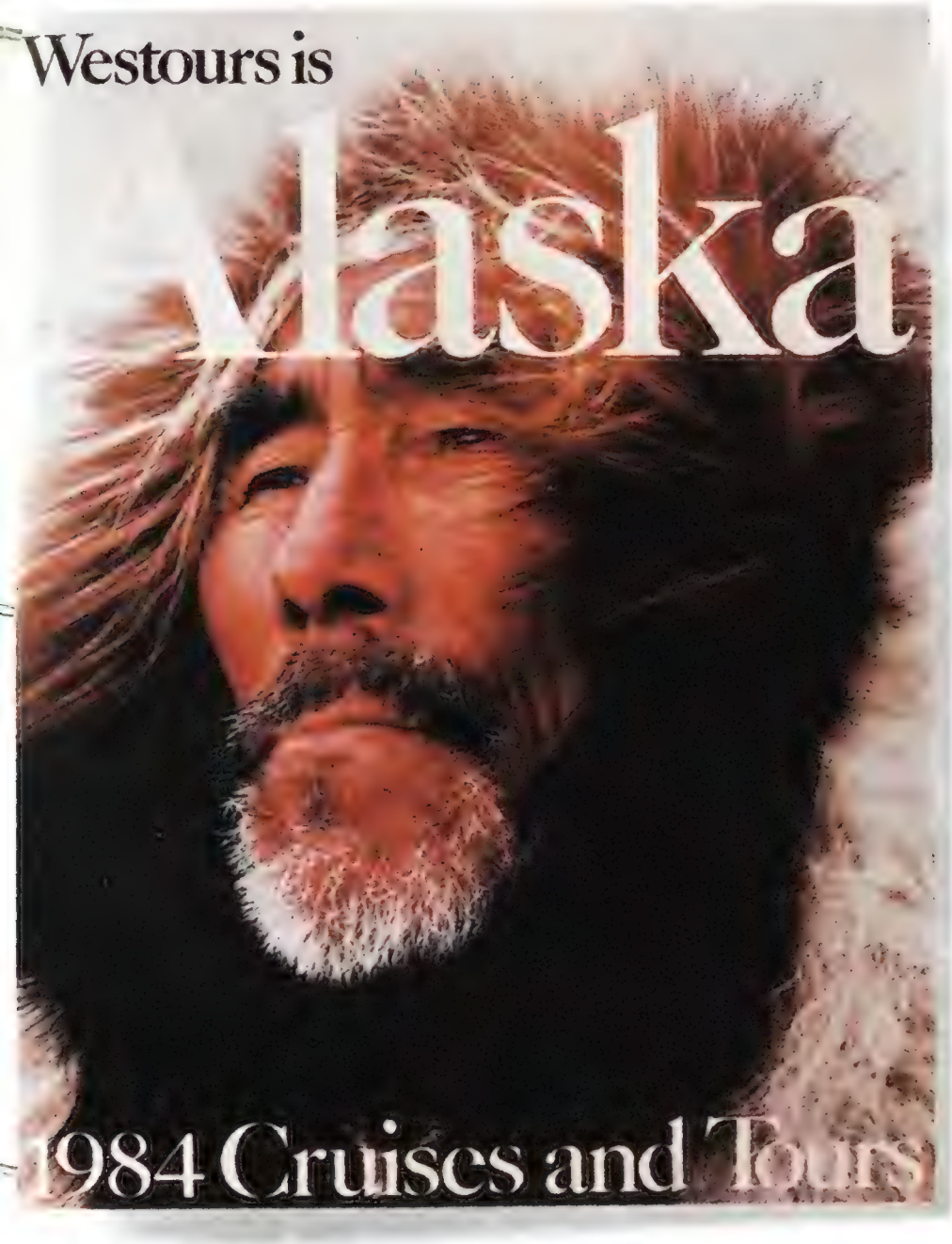
Enameled silver, angler's matchsafe was crafted in Birmingham, England.

Matchsafe advertising Eddie's Saloon portrays Eddie and canine friends.

Scientific American matchsafe was carried by dedicated New York reader.

Turn this upside-down, and watch jolly tippler's face as his glass empties.

This book can save you time, trouble, and until Dec. 15, $300.



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Domestic Study Tours

Sapelo Island November 2-7: Camp on unspoiled beaches while exploring this Georgia barrier island from water's edge to interior oak and bayberry forests.

New York City November 17-20 or December 8-11: Private art collections, *Cats*, N.Y. Yacht Club, Metropolitan Opera are all part of this insider's view of New York.

Florida Keys and Everglades December 3-10: An outdoor adventure, featuring a day trip to Dry Tortuga and canoeing in the Everglades' rivers and lakes.

Christmas at the Smithsonian December 9-11: Welcome the holidays with a gala tree-trimming party in the castle and special tours of the museums.

Hawaii January 29-February 11 or February 26-March 10: Hike and camp in the more secluded areas on three of these enchanted Pacific islands.

Yellowstone in Snow February 17-26: Ski across landscapes blanketed in stillness for a close view of wintering elk and steaming geysers.

Baja Whale Watch February 19-27: Board the *Royal Polaris* for an unforgettable journey to Baja Mexico to watch the migration of the gray whale.

Puerto Rico February 20-March 1: Travel to remote tropical rain forests to see colorful bird life, cascading waterfalls and exotic flowers.

Savannah and Charleston March 22-29 or April 8-15: Experience the gracious living of the past in charming seaports with their elegant townhouses, fine antiques and cobblestone streets.

Okefenokee April 8-14: Canoe through this beautiful wildlife refuge with moss-draped cypress trees and an array of springtime flowers and birds.

Upcoming new trips include a *Civil War* tour, an archaeology dig at *Crow Canyon*, a cruise and land tour of *Alaska*, and a Mississippi River cruise on *Delta Queen*.

Washington "Anytime" Weekend: An economical and convenient way to visit your choice of Smithsonian museums. Package includes hotels, meals, Tourmobile and exclusive tour of Smithsonian castle. Application and payment must be received at least ten days prior to arrival.

Foreign Study Tours

These tours range in size from small group experiences to charter adventures and vary in price from low cost to deluxe, depending on the type of travel, destination and length of trip:

People's Republic of China, 1984: Retrace the Silk Route, climb China's sacred peaks, cruise the Grand Canal or Yangtze River, explore back roads, study decorative arts and antiques, or journey by train through the countryside. Exclusive tours are led by a Sinologist and include intensive pre-tour briefing.

Journey to Asia Minor and the Aegean Islands October 9-22: From Athens, join experts aboard the *Illiria* for a study voyage to important historic and archaeology sites. Visits to Rhodes, Santorini and the Turkish cities of Antalya, Bodrum and Ismir.

Portugal October 18-November 1: Traverse the land of the explorers for a search into the past and a good view of contemporary life. Begin with Lisbon's diverse charms and gentle character before sampling the rich variety of the historic coastline and hinterland.

Japan October 23-November 9: Explore Kyoto and nearby Nara before traveling to the Inland Sea and Central Honshu or through the Japanese Alps and along the Sea of Japan. Follow the excursion with a four-day stay in bustling Tokyo.

The Atlantic Crossing December 3-18: A sailing adventure from the Canary Islands to Antigua on the four-masted bark *Sea Cloud* features lectures on the art of sailing, navigation, marine life and the history of this beautiful ship.

Mexico City and El Tajin January 12-24: With a Mesoamerican anthropologist, discover the rich archaeology and important museums in and around Mexico City, Puebla and seldom-visited sites of the Veracruz coastal plains.

Thailand and Burma January 20-February 10: Colorful cities, remote villages of the hill-tribe people, and historic sites will capture the splendor of Asia's most exotic countries.

India and Sri Lanka January 22-February 12: Combine a land trip to Delhi, Agra, Jaipur and Udaipur in northern India with a voyage around the Indian subcontinent on the *Illiria*. Explore the country's fascinating cultural contrasts with study leaders and local speakers.

Zapotec and Mayan Mexico February 9-21 or March 8-20: Study native cultures—past and present—in Oaxaca, San Cristóbal de las Casas and the Yucatán.

Morocco March 8-24: Explore the exotic imperial cities of Marrakesh, Fez, Rabat and Meknes and the powerful beauty of historic desert and mountain villages.

Ancient Civilizations March 11-31: A unique study voyage aboard the *Argonaut* traces the development of Western civilization. Begin in Cairo, then travel to historic sites along the Nile, in Jordan and Israel, before stopping in Santorini, Crete and Athens.

Rouen and the Norman Countryside March 31- April 15 or October 6-21: The ancient city of Rouen, capital of lush Normandy, provides a superb setting for walking tours, museum visits and special excursions nearby, including Norman churches, elegant beach resorts and Monet's Giverny.

Canals and Old Masters April 10-24: Art museums, historic tours and spring flowers highlight four days in Amsterdam. Then sail by riverboat to explore the cobbled streets of medieval Dutch and Belgian port cities, plus Brussels.

London and the English Countryside April 29-May 13: A full program of special lectures, walking tours, theater, excursions and a five-day countryside travel seminar.

Write National Associates, A&I 1278 Smithsonian Institution, Washington, D.C. 20560 or call (202) 357-2477 for specific tour brochures

in Washington

Selected Studies Seminars

Enjoy the treasures at the Smithsonian in special programs and popular behind-the-scenes tours. Choose from:

World War I Aviation October 16-21: World-famous experts share their vast knowledge to give new and meaningful insights into the enduring beauty, high adventure—and recklessness—of the first war fought in the air. Includes tours at the museum and its equally exciting restoration facility at Silver Hill.

Aircraft Restoration: How To October 23-27: Workshops with the master craftsmen at the Garber Facility (Silver Hill) of the National Air and Space Museum.

Repeat Due to Demand
American Antique Furniture October 30-November 4 (October 23-28 has been filled): Connoisseurship of masterpieces, 1650-1840. Includes great collections, detection of fakes, care of antiques and tours of Winterthur Museum and the Diplomatic Rooms at the Department of State.

Quilted Clothing November 6-11: Design and make a smashing one-of-a-kind quilted jacket from start to finish with warm and witty author Virginia Avery. Includes specially arranged behind-the-scenes tours of the outstanding quilt collection of the Smithsonian and a designer fashion show.

Irresistible Magazine Writing November 13-18: Edwards Park, along with other experts from *Smithsonian* and *National Geographic* magazine, shares the secrets of irresistible writing, whether it be for magazines, newspapers, annual reports—or a letter asking for a raise or proposing marriage.

Masters of American Painting January 29-February 3: Popular lecturer William Kloss focuses on the great works of favorite artists. Includes in-depth tours of the unprecedented and memorable exhibition of more than 100 masterpieces, "A New World: American Painting from 1760-1900," organized by the Boston Museum of Fine Arts at the request of the Louvre.

French Impressionist Painting March 4-9: Lectures and tours with William Kloss on masterpieces by Monet, Degas, Renoir and others in Washington's famous museums.

or (202) 357-2475 for seminar brochures.

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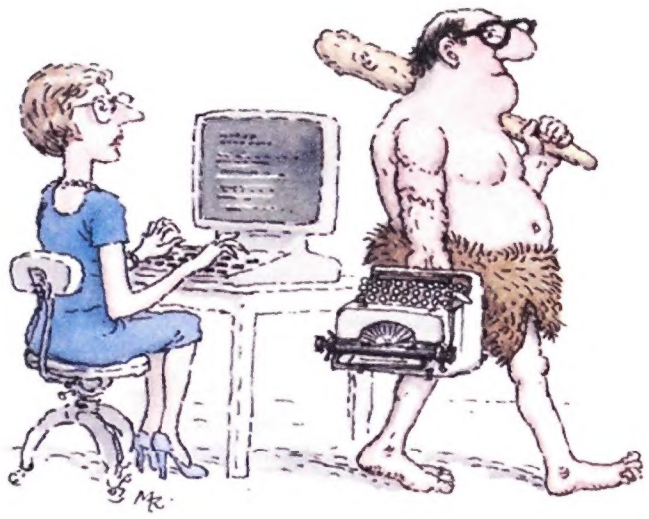
By T. H. Watkins

Me and my manual, pals—thwack!—*forever*



The very machine on which this is being written is on its way out, they tell me. I mean the classic, upright, gray-and-black 30-pound manual typewriter. In its stead have come, first, the electric typewriter in all its permutations, and then that witchery of chips and bytes and bits known as the word processor. In the same world as such a marvel, it is commonly agreed, the manual typewriter is as good as dead and gone. Writing in a recent issue of *Time* magazine, Roger Rosenblatt would not let us even mourn its passing. "Let the thing go," he says. We need "not feel that the world is about to lose a piece of its heart," he says.

The hell you say, Mr. Rosenblatt.

It is still much too early for obituaries. I will not concede the demise of the manual typewriter. It will be with us for as long as writing is with us. Real writing, muscle-blood-and-bones writing. I have evidence to support this contention.

First, the beast itself is not going to simply vanish. Like the wire coat hanger, it is virtually indestructible. Manual typewriters lurk everywhere—in attics, closets, gas stations, police precincts, Goodwill outlets; they pop up in flea markets, church bazaars and garage sales nearly as often as kitchen-dinette sets. Almost no one has ever just *thrown away* a manual.

There is good reason for this. The classic manual typewriter survives in such abundance because it is, quite simply, one of the sturdiest, most sensible and most reliable machines ever produced by any civilization, anywhere, anytime. It is a thing of steel and sinew, a miracle of sturdy contrivance, a paragon of the purely mechanical arts, its performance a delicate saraband of give-and-take, strength and flexibility. It is the sort of machine that can be hurled bodily across the room, then be picked up and put back to work again (I have seen this done). As E.B. White wrote of the Model T, the classic manual typewriter is "hard-working, commonplace, heroic."

Furthermore, it is an understandable machine, even to the average layman. Most of its working parts function in a comprehensible manner having to do with simple physical laws, and most are right out there working where you can see them. Unless it has been deliberately beaten with an eight-pound sledge or thrown out of an airplane, the manual typewriter normally is easily and quickly repaired by anyone with any sort of mechanical inclination at all. I, who have difficulty lining up the arrows so that I can open a bottle of aspirin, have been known to repair a crippled typewriter.

What has all this to do with real writing? Just this: being both abundant and out of fashion, classic manual typewriters are extraordinarily cheap; not one of the four in my possession cost more than $40. Take the next generation of real writers, those erstwhile Faulkners or Stegners or Didions blossoming unseen out there, minds bursting with images, entranced with language, obsessed with the need to get it down, get it down, make the world *see*. Are such dreamers going to run out and buy word-processing systems with which to immortalize the flame that burns within? Not bloody likely. No, what they will do is this: they will find, say, an old Underwood at a yard sale, buy it, haul it home, hoist it with a thud to the top of the kitchen table, roll in a clean sheet of drugstore bond and, in the immortal words of newspaperman Gene Fowler, "stare at it until drops of blood appear on the forehead."

Doing so, they will learn what no word processor can teach them: the act of writing is an intensely personal thing and requires a machine equal to the emotional investment involved. The classic manual typewriter fits the bill precisely. Along with all the qualities mentioned earlier, it has the property of becoming one with the writer in the steamy act of creation. It is a very physical, even intimate business. The finger jabs the proper key with a psi of 1.5. The type bar arcs swiftly upward and strikes through the ribbon to the paper with a solid *thwack*. A letter appears, then a word, then a sentence. The margin bell rings, the left hand thrusts out to lever the paper up two spaces and sweep the carriage back to the right, and it all begins again, a noisy ballet of man and machine until the page is filled, yanked out, laid aside, and a new sheet ratcheted into place, full of promise, full of hope. All along, the machine is cursed for its errors, praised for its brilliance, caressed, patted, glared at, struck. Movement. Physicality. Unity. The word is beaten into existence by a real writer on a real machine.

Once learned, this primitive but rewarding process may be abandoned by some—there are apostates in every age—but it can never be forgotten. And there are enough writers left who will never tear themselves from it to ensure that the manual typewriter will be with us for as long as we remain a civilized society.

Me, for example. I have no intention of retiring, and 30 or 40 years from now fully expect to be found one morning, hunched over and sightless, my chin resting on the platen and my fingers tangled in the keys of an old Underwood.

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